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The true test of a university's success is not the discoveries and inventions which its professors make or the books they write, but the sort of people its students turn out to be.

—Clarence Tracy

INTERNATIONAL CULTURAL COOPERATION AND THE FURTHERANCE OF OUR FOREIGN POLICY[1]

HERMAN B WELLS, A.M., LL.D.,[2] *Bloomington*

I have evidence to prove that I am glad to be with you. Tonight on the Bloomington campus of the university we are having a dinner honoring our great basketball team which has just won the Big Ten Conference Championship for the second consecutive year. A basketball championship at Indiana is an important event indeed. I am missing that event to be with you. "Greater love than that hath no man."

Perhaps Dean Hine has already welcomed you to the Hoosier state—even though he has, permit me to add my word of welcome. We are happy you chose to meet here. We hope that your meeting is a success. We extend to you a cordial invitation to visit Indiana University's campus—at Bloomington and at Indianapolis.

If you had come to Indiana in the early days, you would have found the practice of the healing arts different from what it is now. Professor Buley of Indiana University describes dentistry and medicine in early Indiana in his Pulitzer prize-winning book "The Old Northwest" and in a volume entitled "The Midwest Pioneer: His Ills, Cures & Doctors." He appropriately dedicates the latter volume "To the Pioneer Doctor who Boldly Faced the Wilderness; and to the Pioneer who Bravely Faced the Doctor."

Professor Buley tells us that the typical dentist was itinerant and often no more than a puller of teeth. One "dentist" reported that in a span of seven years he had "traveled between 25 and 30 thousand miles in different parts of the United States." It is understandable that the profession did not then enjoy the highest popular esteem. The *Cincinnati National Republican and Ohio Political Register* of August 10, 1824, carried a front-page story on "The Tooth Drawer" and described him as "a most savage little animal" who

> "desires that the world had but one tooth that he might wrench it out by a single twist. . . . He has the confidence to consider a man's throat as public property, and will intrude himself into his mouth, ransack his jaws, and pilfer him of his teeth, without the least hesitation. . . . He has no time nor inclination to think of anything, save ravishing people of their teeth. A Tooth Drawer is as forward as he is foolish—as important as he is ignorant—and as impenetrable as he is impertinent."

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[1]Address delivered to the American Association of Dental Schools, French Lick, Indiana, March 22, 1954.

[2]President, Indiana University.

What was true of Indiana in the early days for the most part was true of dentistry and medicine nearly throughout the United States. What a marked change there has been since that time! Dentistry today is firmly established as a science; its principles and methods are tested by experience; its practitioners are honored as scientists and respected as most useful citizens by the professional and non-professional world alike. Dental and medical colleges are among the foremost professional schools of our universities.

I wish to speak to you on a subject far removed from the technical discussions in which you have engaged during these days, namely, "International Cultural Cooperation and the Furtherance of Our Foreign Policy." This is not an impractical subject, however, because more and more in a world grown small we must come to realize that the success or failure of our foreign policy is of vital concern to each of us. Internally we have made great scientific progress in decades just passed. We have likewise made great economic progress, and our economy has developed to an unprecedented degree, bringing to our society unrivalled high standard of living. But internal achievements in science and economics alone are not adequate to provide for our future peace and security. In a shrunken world it is essential that we devise a workable and effective foreign policy. The United States of America is now engaged in an extraordinary effort to achieve an effective and constructive foreign policy working in close cooperation with Canada, our valued neighbor to the north. In this effort we must constantly re-examine our social institutions to insure that each makes a maximum contribution to our national objectives.

During the past decade I have had the privilege of traveling to various parts of the world on educational and diplomatic missions. I have had some opportunity to observe firsthand how our foreign policy actually works in the field. In these travels, I have learned that if our policies are to succeed, we must interpret our ideals and achievements to other peoples and allow them to share with us our scientific and technical know-how for their social and economic benefit.

My observations have led me to conclude that one of the most effective ways for universities to contribute to our national objectives abroad is the promotion of student exchanges with other countries. Further, I am convinced that there are no divisions within the university that can make a greater contribution than the dental and medical schools. Our national interest demands that we make available more study opportunities in our dental and medical colleges for foreign students and

especially, although by no means exclusively, for students from the so-called underdeveloped countries. I wish to discuss with you this need in terms of realistic international strategy, and especially with reference to dental colleges.

You know as well as I that our enemies attack us on all fronts—the military, political, economic, and cultural fronts.

When our enemies attempt to discredit our culture in the minds of their captive peoples and in the minds of our friendly allies, they do us more harm *in the long run* than when they raise armies or attempt to withhold from us strategic materials. The Soviet Union continuously presents us as a dollar-hungry, blood-thirsty vampire. The Soviet spokesmen deride our culture as geared to the dollar and our science to warfare. Our standards of morality are claimed to be the very lowest and our material greed matched only by our lust for war. The Soviets present us to the world as a people inexperienced in art, uninterested in music, illiterate in letters, and not concerned with the application of science to the welfare of humanity.

If we are to remain trusted and respected among our friends and if we want to keep them as friends, we must not let ourselves be known to others only in terms of airplanes, battleships, tanks, and armed divisions.

The world knows far too little of our cultural and scientific-humanitarian achievements. Young men and women from other countries, trained in American colleges and universities, and familiar with the American scene and the true character of our people, can be the standard-bearers of the true American science and culture.

I can think of no better ambassadors for the real America than the young dentists who return from the American dental colleges to their native lands. Skilled in scientific techniques and imbued with the working principles of the democracy of our society, they can be trusted emissaries of America abroad and ambassadors of friendship and good will for our country. They will alleviate pain and lighten the burdens of their people, but their influence will not stop there. With the growing popular respect for science everywhere the regard for competent dentists increases, and their opinions in fields even outside dentistry steadily carry more weight. The young native scientists trained in America and sympathetic to America can spark the friendship and respect of their people for the West.

All of this is particularly true for the so-called underdeveloped areas of the world—some of Latin America, Africa, the Near East, and South

and Southeast Asia. The social and political influence of professionally trained people, particularly if educated abroad, is especially great in these countries. Few of these countries have facilities for basic dental training, while in others up-to-date scientific training facilities are so grossly inadequate that their graduates are not prepared to practice modern dentistry.

For the young men and women of these nations it is important that we offer opportunities of admission to the *basic* course in *general* dentistry. Even when their homelands have basic dental colleges these schools sometimes are so poorly staffed and equipped that they do not prepare their graduates for advanced work in our institutions. Opportunities for study and research at the post-doctoral level of specialization also are important. They are particularly, though by no means exclusively, important to the citizens of the scientifically highly advanced nations whose presence on our campuses can make a distinct professional contribution to dental science and teaching in this country, for science is universal and we can learn from others in every field of professional education. International cultural cooperation is a two-way street.

The advantages of accepting dental students from abroad have been understood for a long time by some other scientifically advanced nations, better than we seem to understand them today. Germany in particular realized several generations ago that young foreigners admitted to her universities could later serve as loyal emissaries of the German point of view. There was a time not so long ago in many countries in South America, the Near East, and the Far East when most dentists and physicians and almost all dental and medical specialists had studied in German universities.

Young men and women in countries everywhere wish to study dentistry in the United States and Canada. In few professions have we obtained an international reputation of unqualified scientific excellence, *universally* accepted, as we have in dentistry. I recall, to return to Germany, how one of the leading dentists in Berlin expressed to me his sincere appreciation for being allowed to observe and confer with the dentists of the U. S. Army Station Hospital. In the scientifically highly advanced nations and in the less advanced countries American dentists enjoy extraordinary and, I am sure, well deserved prestige.

Students from abroad are ready to come to our dental schools if we will admit them and extend a helping hand. Yet during the current academic year, as of October, 1953, our dental schools have enrolled only 106 undergraduate students from foreign countries, excluding Canada or

United States possessions. Of the 43 dental schools in the United States, 19 have no foreign students at all and seven others have only one student from abroad. It may be of interest in this connection that Howard University has 30 students from foreign countries. Our own school has eight foreign students, and we might well increase our number.

In addition to the 106 dental students whom I mentioned, there are many foreign students enrolled in pre-dental courses and in science degree courses with the real intention and hope of transferring to dentistry. Although many of these students will be well qualified applicants for admission to dental schools, few of them will be admitted under current practice. I am sure most of them enroll in pre-dental work with the honest conviction that if they satisfactorily complete it they will be admitted to dental school. I know you are aware that they constitute a special problem. They build up high hopes for a dental career, only to find their hopes shattered and their money for three or four years of college wasted—so it appears to them—when they are rejected for admission. In such cases we not only fail to make friends, but we actually create potential enemies of America. We must not forget that personal attitudes toward nations more often than not are based on immediate personal experiences.

I do not speak in criticism of the failure to admit these foreign students in the past. I fully recognize that it has been difficult or altogether impossible to take larger numbers. Space and resources have been limited and the pressure for the available places from highly qualified American applicants has been great. Certainly no qualified American boy or girl deserves to be rejected and, of course, theirs is the first priority for admission.

The situation is changing, however. Happily, since 1945 new dental schools have been started and existing schools have been enlarged. At the same time, the national pressure for admission is easing. The great bulge of veteran students is behind us, and the general college enrollment in pre-dentistry is declining. At least for the next few years, there will be room for every qualified American youngster and also more room for students from abroad.

No one institution can do this job alone. Every dental school in the country must do its share—private and public alike. It must be a united effort.

Training dentists for the less developed areas of the world and providing specialized graduate training for dentists of advanced nations presents a magnificent opportunity to the American dental schools. It

is an opportunity to contribute in a direct and effective manner to the accomplishment of our national objectives in the field of foreign affairs. Even though such action may involve directly only a relatively small number of persons and comparatively small financial expenditures, it will achieve results far out of proportion to the effort. It will significantly boost stability, prosperity, and Western traditions in areas which now may be of doubtful political and social orientation. If you seize this opportunity, the American people will have reason to be grateful to you not only for the wonderful progress you have made in your science, for freeing us of the "tooth drawer," but also for carrying the banner of a humane and enlightened culture to every part of the world, thus advancing the cause of international understanding, freedom, and peace.

Announcement

The annual meeting of the American Association for the Advancement of Science will be held on the Berkeley campus of the University of California during the week of December 27-30, 1954.

Section Nd. Dentistry, which this year was granted full section status, will hold its program on Tuesday, December 28th, in Lewis Hall from 9:00 a. m. to 5:00 p. m. The morning meeting will be a symposium on "Growth and Development," under the direction of Dr. Wendell L. Wylie. The afternoon section will be a symposium on "Hazards of Dental Radiation," under the direction of Dr. Gordon Fitzgerald. Members and guests of the section will be luncheon guests of the Faculty of the College of Dentistry at the Faculty Club on the Berkeley campus.

See page 242 for detailed program.

THE COUNCIL ON DENTAL RESEARCH OF THE AMERICAN DENTAL ASSOCIATION*

H. TRENDLEY DEAN, D.D.S.†

History

The American Dental Association has long encouraged and fostered dental research. Too often we are inclined to look upon the past ten or fifteen years as the advent of a golden age in dental research and to dismiss captiously the decades that went before as an unimaginative period solely devoted to the development of technological procedures. Such was not the case. When the National Dental Association (now the American Dental Association) was reorganized in 1913, a Scientific Foundation and Research Commission was one of the agencies established.

In 1920 the Scientific Foundation and Research Commission became the Research Commission, a standing committee supported by funds appropriated by the Association. The Research Commission functioned for many years in coordinating some of the research activities of the Association, recommending grants, and supervising the work of the research associates engaged in investigation under the terms of the Association grants. One of the grants is now of considerable historical interest. As one reviews the early mottled enamel studies—from whence came the later studies on the relationship of fluorine to dental caries—we find that shortly after the organization of the Scientific Foundation and Research Commission one of the first grants made about 1916 was to Dr. Frederick S. McKay of Colorado Springs, Colorado, for "Studies on Mottled Enamel and Brown Stain Deformities." This grant permitted the detailed study of the extensive South Dakota area, published in 1918, which gave concrete support to the hypothesis that mottled enamel was a water-borne disease. Another grant of interest in this same field was made in the 1920's for a study which would attempt to throw light on the cause of mottled enamel through animal experimentation. The American Dental Association has long evinced an interest in this area.

Present Organization of Research Council

Twenty-six years ago the Research Commission established a fellowship at the National Bureau of Standards and later at the National Institute of Health. The development of these fellowships will be discussed later.

In an Association reorganization in 1949, the functions of the Research

*Presented at the 31st Annual Meeting of the American Association of Dental Schools, French Lick, Indiana, March 22, 1954.

†Secretary, Council on Dental Research, American Dental Association.

Commission were delegated to the newly created Council on Dental Research.

The 1952 report of the council set forth a number of items of immediate and continuing concern. These were:

1. The preparation of a catalog of dental research so that the American Dental Association will become a repository for information relating to dental research;
2. Stimulation of a fellowship program so that dental research workers may acquire the necessary training in order to engage in research;
3. Promotion of dental research by assisting institutions and research workers in procuring funds and personnel;
4. Maintenance of a liaison with federal and quasi-federal agencies concerned with dental research; and
5. Creation of interest in, and support of, dental research through the constituent and component societies of the American Dental Association, specialty societies, private foundations, dental manufacturers, and the federal government.

The Council is initiating steps in these fields to stimulate an increase in the quantity and quality of dental research.

The Council supervises two operational activities. The one at the National Bureau of Standards was established in April, 1928; the present senior research associate, Dr. George C. Paffenbarger, has just completed a quarter of a century in this work. The other activity, that at the National Institutes of Health, was established in September, 1941. Both of these groups of fellows were established by the Council's predecessor, the Research Commission; how soundly they built is well known to all of you.

At present there are ten employees of the American Dental Association working at the National Bureau of Standards. Over the years this fellowship has tended to stimulate the Bureau of Standards and other federal services to expand their own activities in the highly important field of dental materials. Today at the National Bureau of Standards there are 30 persons engaged in full time research in one phase or the other of dental materials: ten from the American Dental Association, eleven from the National Bureau of Standards, and nine from the Army, Navy, and Air Force. There is no faraway corner of the world where dentistry is practiced that is not influenced by this group.

Of the nine American Dental Association fellows on duty at the National Bureau of Standards, two are dentists, two are chemists, and one each of the following: a chemical engineer, a metallurgist, a crystallographer, a science technician, and a clerk-stenographer. Together with their colleagues of the National Bureau of Standards and from the Armed Services, they engage in a multiplicity of duties including formulation of new and revision of old specifications, testing of certified materials, research investigation into dental materials supplemented with

clinical studies when necessary, and basic research centering in study of the fluorescence and crystal structure of the enamel and dentin.

The American Dental Association Research Fellowship at the National Institute of Dental Research is concerned with investigations in the biological sciences. The senior research associate has for many years specialized in oral spirochetology. Other associates are a biochemist working on the relation of amino-acid deficiences to dental caries in white rats, and a bacterial physiologist studying the fusiform bacilli. Additional authorization has been made for a histo-chemist.

The mere enumeration of the American Dental Association fellows at these two institutions depicts the complexities of modern dental research and the ever-increasing number of disciplines that must be called upon to explore the hidden recesses of the ever-widening panorama of dental research. It brings forcibly to mind how many fields of study interrelate and how essential it is that they be brought together either directly or by synthesis in modern dental research.

Research in Dentistry

Although the past decade has seen an expansion in dental research, the acceleration has been snail-like in comparison with that which occurred in medicine. It has been estimated[1] that the total expenditure for medical research in the United States increased from an annual rate of $18,000,000 in 1941 to $115,000,000 in 1946, and to $181,000,000 in 1951. Dentistry's participation in this phenomenal growth was largely that of the onlooker; probably not more than two or three million dollars are now being spent annually in the United States on dental research. An interesting example, but by no means unique, may be observed by referring to the National Institutes of Health research grants appropriations for fiscal years 1950 through 1953.[1] "Research grants" are funds expressly earmarked for grants for research to outside agencies such as universities, colleges, research institutions, hospitals and the like. During this period the total research grants fund of the National Institutes of Health increased approximately seven and a half million dollars, from about thirteen million a year to over twenty million. How did dentistry fare during this period of expansion? The amounts of money appropriated for dental research grants increase from two hundred thousand to two hundred and twenty-one thousand, a $21,000 increase contrasted to $7,484,000. Deignan and Miller[2] recently analyzed the

[1]Endicott, K. M., and Allen, E. M.: "The Growth of Medical Research 1941-1953 and the Role of Public Health Service Grants," *Science*, *118*, 337-343; Sept. 25, 1953.

[2]Deignan, S. L., and Miller, E.: "The Support of Research in Medical and Allied Fields for the Period 1946 through 1951, *Science*, *115*, 321-343; Mar. 28, 1952.

12,923 research grants registered with the Medical Sciences Information Exchange (now the Bio-Sciences Information Exchange) during the period 1946-51. This report is based on research grants and contracts awarded by government and by the larger public and private foundations. The analysts call attention to certain limitations in their data; few awards made by industry, local foundations, or funds established solely for individual universities were included. This paper reports some interesting data. The impact within recent years of governmental funds has greatly influenced medical research. Still in 1951 the percentage of funds expended for cancer research was about equally divided between those obtained from government and those obtained from private sources. Similar ratios obtain for the category known as infectious diseases. Research in dental problems, the digestive system, and the integumentary system disclosed opposite characteristics with an unusually high percentage of funds (97%) being obtained from governmental sources. In total dollars dental research received scant support from government; practically none from private foundations.

That research in dentistry is wholly inadequate in relation to the magnitude of the problem is obvious. A health problem costing the American people well over a billion dollars in 1952 has been almost completely ignored in the march of millions of dollars into medical research. The niggardly amount of funds made available to dental research may bespeak a complete indifference to dentistry by those whose duty it is to develop a broad perspective vision of the whole health field. On the other hand, we ourselves may be partially at fault. Have we thoroughly imbued our own thinking as to the essentiality of dental research so that we can communicate our thoughts to others with fervor and conviction? We ourselves must answer that question.

Research in the dental schools of the United States is spotty. Recently I examined the published abstracts of each of the 387 papers read at the 1951, 1952, and 1953 annual meeting of the International Association for Dental Research and classified them according to the institution of the senior author. Abstracts of "papers read by title" were excluded. These data are shown in Table I.

Certain distributional features are immediately apparent. Investigators from six dental schools (Tufts, Northwestern, Illinois, California, Harvard, and Minnesota) have presented almost as many pages (115) as investigators from the other 36 dental schools combined (121). During the three years cited no reports of research were made by eight schools, while eight more schools contributed only one paper each. This situa-

tion should be examined with vision, imagination and courage.

Assuming that with a fuller understanding of the magnitude of the dental problem it is not unlikely that funds-granting bodies may concede

TABLE I

Classification of the 387 papers read* at the 1951, 1952, and 1953 Annual Meeting of the International Association for Dental Research According to the Institution of the Senior Author. (*J. Dent. Res.* 30, 459-501, Aug. 1951; 31, 459-499, Aug. 1952; 32, 663-693, 709-716, Oct. 1953.)

Dental School	*No. Papers read* 1951	1952	1953	*Total*
Alabama	2	3	5	10
P & S (San Fran.)	2	2	3	7
California	7	8	1	16
Southern Calif.	0	1	2	3
Coll. Med. Evang.	..	..	..	..
Georgetown	0	0	1	1
Howard	0	0	0	0
Emory	0	0	0	0
Loyola (Chicago)	2	2	0	4
Northwestern	9	5	8	22
Illinois	2	6	12	20
Indiana	0	5	4	9
Iowa	0	0	0	0
Louisville	0	1	0	1
Loyola (N. O.)	0	1	0	1
Maryland	1	0	1	2
Harvard	2	3	9	14
Tufts	11	6	12	29
Detroit	1	0	2	3
Michigan	5	1	4	10
Minnesota	5	5	4	14
Kansas City	4	1	1	6
St. Louis	0	0	1	1
Wash. (St. L.)	2	0	1	3
Creighton	1	0	0	1
Nebraska	0	1	0	1
Columbia	2	1	4	7
New York	3	2	4	9
Buffalo	0	0	0	0
No. Carolina	0	1	0	1
Ohio State	1	1	1	3
Western Reserve	3	1	3	7
Oregon	1	3	2	6
Temple	0	0	0	0
Pennsylvania	1	2	5	8
Pittsburgh	0	1	2	3
Meharry	0	0	0	0
Tennessee	0	0	0	0
Baylor	0	0	0	0
Texas	0	0	5	5
Virginia	1	1	2	4
Washington	1	0	0	1
Marquette	1	1	2	4
Total for Dental Schools	70	65	101	236
Others: (Research Institutions, Federal Agencies, etc.)				
Univ. Chicago	7	4	4	15
Univ. Rochester	7	3	7	17
Eastman Disp.	6	2	5	13
Amer. Dent. Assn.				
Fellows N.B.S.	1	2	3	6
Fellows N.I.H.	0	0	0	0
United States				
Army	1	4	5	10
Navy	5	4	4	13
Air Force	1	2	2	5
NIDR (NIH-USPHS)**	6	6	10	22
Nat. Bur. Stan.	2	1	3	6
Vet. Adm.	1	1	0	2
Others				
Univ. Toronto	1	2	3	6
Montefiore Hosp. NYC	1	0	3	4
Miscellaneous	4	8	20	32
Total for Others	43	39	69	151
Grand total	113	104	170	387

*"Abstracts of papers read by title" excluded.

**National Institute of Dental Research, National Institue of Health, U. S. Public Health Service.

to dentistry an increased amount of money for dental research, we are then confronted with the problem of using these funds effectively and profitably. It takes a trained research mind to translate research dollars into research finding. It is well known that the training of both the Doctor of Dental Surgery and the Doctor of Medicine is directed primarily toward the clinical practice of dentistry or medicine. There is little in the undergraduate curriculum of either profession that prepares them for embarking on a career in the modern and increasingly complex world of research.

It is essential that qualified young dental students be stimulated to a career in research or one which combines research and teaching. Interdisciplinary training is essential, and the young graduate should plan on spending several years at the graduate school level majoring in the basic science or sciences of his choice. Such training not only increases dentistry's research potential but immeasurably strengthens teaching and research in the dental school to which he returns. A number of fellowships for such training is available, and it is well to consider not only the current dental graduate but those younger graduates who have spent two or three years on the faculty in a full time status. Upon completion of their training such men occupy a strategic position in relation to the school's program.

Impact of Research on the Dentistry of the Future

A few years ago a World Health Organization newsletter[3] discussed the gigantic strides made during the past 50 years in medicine and public health. The rapid progress made in the control of communicable diseases has markedly affected the pattern of medical practice. Typhoid and diphtheria, to mention only two, are merely appalling memories of a bygone era, remembered only by the older generation. Thanks to the antibiotics, the venereal diseases are now under partial control. The physicians finds more and more of his time being given to preventive measures rather than the traditional diagnostic and therapeutic services.[4] The pediatricians represent probably the outstanding example in medicine of this shift to preventive services. A recent survey by the American Academy of Pediatrics based upon questionnaires returned by 81 per cent of all pediatricians showed that 54 per cent of pediatricians' visits on an average day were for health supervision. Less than half of their time was devoted to the care of sick children.[5]

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[3]Anon.: "Fifty Years of Medicine and Public Health," *WHO Newsletter*, No. 13; Jan., 1950.

[4]Galdston, I., Editor: "The Epidemiology of Health," *New York Academy of Medicine* Book, New York-Minneapolis, 1953.

[5]"Preventive Medicine in Medical Schools—Report of the Colorado Springs Conference, Nov., 1952," *Jour. Med. Educ.*, 28, *part* 2, Oct., 1953.

Dentistry's problem is markedly different. The transition in medicine has been gradual; as the communicable diseases were gradually brought under control, increasing attention was necessarily directed to diseases of the cardio-vascular system, oncology, the metabolic and degenerative diseases and other conditions common to an aging population.

On the other hand, dentistry developed to meet the needs resultant from principally two diseases, dental caries and its sequelae and the periodontal diseases. Both diseases or conditions are characterized by unusually high attack rates and up to recently no effective method of mass control. Literally we are carrying all of our pathological eggs in one basket. A few successful research ventures can dramatically change the whole course of dentistry in the next generation, and we are well into one period of this change at present. As of March 1, 1954, there were 930 communities in the United States with a population of 17 million people using fluoridated domestic water supplies. The older studies such as Grand Rapids, Newburgh, and Brantford (Ontario) have now been in operation over 8 years. Examinations of the 6, 7, and 8 year old children within the past year or two reveal that the amount of dental caries in the permanent teeth is approximately 65 per cent less than that observed in the same age group prior to fluoridation. Such consistency strikingly attests the validity of the fluorine-dental caries hypothesis. A cheap, effective method of mass control of dental caries is now available. When one contrasts the vision and adaptability of the pediatrician with the plight of the ear, nose and throat specialty after the advent of chemotherapy and the antibiotics, it is well for dentistry to pause and look into the future. Not only can it happen to us; it is happening.

Research, and research alone, can provide the navigational aids to lay a true course through the stormy transitional period ahead. Research activities should be doubled and redoubled with particular emphasis upon basic research, the seed corn of research which must of necessity precede the later harvest of applied research. In this rapidly changing scientific world of the present, a continuation of a laissez faire attitude toward dental research might well produce an irremeable situation in the future.

Now that it is possible to bring dental caries under a large measure of control, the dental practice of tomorrow will be drawn more and more into the biological aspects of oral medicine and the concomitant development of preventive dentistry.

SURVEY OF STATUS OF BIOCHEMISTRY IN THE DENTAL SCHOOL CURRICULA

JOSEPH C. MUHLER, D.D.S., Ph.D.,* *Bloomington*

It seems hardly necessary to attempt a justification for the inclusion of a strong biochemistry course in the modern dental school curriculum. However, biochemistry's relationship to the other basic sciences, as well as to the medical and dental clinical curricula, requires a thorough integration of the basic subject matter in order to have a completely adequate appreciation of the value of this subject in everyday dental practice.

The successful application of the principles of biochemistry into general dental practice is of importance if noticeable reductions in the incidence of dental caries and periodontal diseases are finally to be realized. Furthermore, integrated dental research is greatly dependent upon appreciation of fundamental biochemical processes. The course in biochemistry which the dental student receives today must provide him not only with fundamental principles of chemistry but also must serve as a background upon which he may integrate the subsequent dental theory and technique principles. With the current interest in preventive dentistry, the recent dental graduate must be increasingly better versed in the application of chemistry to recently developed prophylactic anticariogenic factors and proposed periodontal therapeutic agents. Therefore, it seems of general interest to determine the nature of the facilities of biochemistry courses currently presented for the benefit of students of dentistry. The collection of these data is intended to provide some basic information for dental biochemistry instructors and other interested personnel about the courses currently being presented in dental schools. From these data it is hoped that the instructors may be able to evaluate their particular courses in light of others similarly conducted. Although stereotyped biochemical education is not suggested or considered unequivocally warranted, it would, nonetheless, seem of interest for a particular instructor to determine in what manner his subject fits into the pattern of similar courses presented in other institutions, with the hope of subsequently improving his course and its design if by chance it may be considered suboptimal.

Fosdick[1] has reported that in 1935 the didactic hours in biochemistry ranged from 0 to 110 hours, while the laboratory work consisted of from 0 to 192 hours. At that time only one school offered no didactic instruction in biochemistry, and only two schools offered no laboratory work. He also indicated that in 1948 the shortest biochemistry course

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[1]Fosdick, L. S.: "Biochemistry in the Dental School," *J. Dent. Educ.*, 13, 67; Jan., 1949.

consisted of 27 hours of didactic instruction, with the maximum of 90, and all but one school offering a laboratory course. The mean number of hours of laboratory instruction was 96 hours. This paper, then, is intended to re-evaluate these factors and in addition extend his data in regard to the facilities and design of the currently presented courses. It seems of interest, for example, to determine how many dental schools devote more than one semester to dental biochemistry, the number of instructors assigned to teach this subject, and some facts pertaining to the pre-professional chemistry prerequisites for dental biochemistry.

ILLUSTRATION I—*Sample Questionnaire Mailed to Dental School Deans Requesting Information Relative to Their Dental Biochemistry Course.*

1. What semester (quarter), and year is biochemistry taught?
   Freshman year_____, 1st semester_____, 2nd semester_____.
   Sophomore year_____, 1st semester_____, 2nd semester_____.
   Is it taught for one or two semesters (2 or 4 quarters)?_____.
2. Is it taught separately or with medical students?
   Separately_____, With medical students_____.
3. Are students other than medical students present in the dental biochemistry course?
   Yes_____, No_____. If yes, who are the students?_____.
4. If taught separately, is it taught during the same semester medical biochemistry is presented or during a different semester?
   Same semester_____, Different semester_____.
5. Are instructors members of the faculty of medicine, dentistry, both, or other?
   Medicine_____, Dentistry_____, Both_____, Other_____.
   If other, please specify_____.
6. Does instructor hold the Ph.D. (in chemistry)?
   Yes_____, No_____.
   If no, what is his degree?_____.
7. Is there a separate department of biochemistry in your school?
   Yes_____, No_____.
8. If the answer to No. 7 is no, does the department provide for a separate budget for dentistry?
   _____.
9. How many classroom hours per semester (or quarter) are devoted to the following?
   Lecture_____, Laboratory_____, Recitation_____, Other_____.
10. How many full-time faculty members are specifically assigned to teach biochemistry?
    _____, How many part-time?_____
11. a. Does your senior instructional staff utilize advanced dental students for assistance in this course?
    Yes_____, No_____.
    b. Do they utilize other junior members other than dental students?
    Yes_____, No_____.
12. Do you feel that the course taught the dental students is equal in thoroughness to that given to other students studying biochemistry?
    Yes_____, No_____.
13. Do you feel that a *special* effort is being made to slant biochemistry to dental problems?
    Yes_____, No_____.
14. Are the laboratory and physical facilities for dental students equal to those for other students studying biochemistry?
    Yes_____, No_____.
15. Are more than two semesters of general chemistry and organic chemistry a prerequisite to dental biochemistry?
    Yes_____, No_____. If yes what additional courses are required?_____.
16. Is nutrition taught as part of biochemistry?
    Yes_____, No_____.

I would appreciate any additional comments you may wish to make concerning this subject.

Illustration I shows a questionnaire which was mailed directly to 48 dental school deans in the United States and Canada in April, 1954. Of the questionnaires mailed, 90 per cent were returned within one month and are included in this survey. Four were returned but were not suitable for inclusion in these data, and since no attempt was made to ascertain from whom the questionnaires came, it was impossible to return them for additional information. Also, one was returned from a dental school in such a stage of development that it was not yet teaching chemistry. No attempt was made to evaluate each individual school's curriculum contents regarding the particular topics discussed in biochemistry since these represent more or less individual interests of each instructor. However, due to the obvious importance of nutrition in modern dental practice, an attempt was made to determine if nutrition was taught as a portion of the course in chemistry, or as a separate subject in the dental curriculum.

ILLUSTRATION II—*A Tabulation of Numbers Indicating the Manner in Which the Various Subdivisions of the Questionnaire Were Answered.*

*1.	Freshman year	36**	10.	Full-time	
	Sophomore year	5		(mean number)	3.5
2.	Separately	32		Range	1 to 12
3.	Yes	12		Part-time	
	No	29		(mean number)	3.3
4.	Same	13		Range	1 to 10
	Different	15	11.	a. Yes	3
	Both	4		No	38
5.	Medicine	6		b. Yes	15
	Dentistry	14		No	26
	Both	12	12.	Yes	32
	Other	9		No	9
6.	Yes	34	13.	Yes	31
	No	7		No	10
7.	Yes	28	14.	Yes	40
	No	13		No	1
8.	Yes	11	15.	Yes	22
	No	2		No	19
9.	Lecture		16.	Yes	23
	(mean no. hours)	50		No	17
	Range	18 to 94		(with biochemistry	
	Laboratory			and separately)	1
	(mean no. hours)	110			
	Range	36 to 192			

*Refers to question number in questionnaire. See Illustration I.
**Refers to actual number of replies to each individual question in the questionnaire.

The pertinent data collected in this survey are seen in Illustration II, and indicate the total number of replies for each individual topic of the questionnaire. Since most institutions are presently on a two-semester academic year, all the data presented in Illustration II are evaluated in terms of one 16-week semester. If, for instance, chemistry is taught for two semesters, only one semester of 16 teaching weeks is included in these data.

In the 41 usable replies it is seen that 88 per cent of the schools teach biochemistry in the freshman year; the others teach it in the sophomore year. A total of 12 schools, or 6 per cent, teach chemistry for both semesters in the freshman year. Of the 64 per cent of the schools which teach chemistry for one semester in the freshman year, there is approximately an equal distribution between those teaching it in the first semester and those teaching it in the second semester (13 schools teach chemistry in the first semester and 11 in the second). Of those which present the course in the sophomore year, 80 per cent offered it in the first semester, with no school teaching it for two semesters. It would have been of interest to determine when the course in physiology is presented; since biochemistry is a useful prerequisite for this course, it would seem useful to have the student complete his chemistry prior to beginning his study of physiology.

Of the 41 schools comprising the data for this survey, 78 per cent indicate that the course in biochemistry is taught to the dental students separately, while six schools, or 16 per cent, teach dental and medical students in the same class. In addition to medical students, 12 schools indicate that other students also are in the dental class. Of these, seven schools have graduate students, two pharmacy, and one each of home economics, liberal arts and medical technology. On reports that biochemistry is taught separately, but on occasion medical students are present. Apparently it is the consensus that the dental students do better when they are the only students present in the biochemistry class. This would seem to be good teaching, since, if a variety of different students are present in the same class with the dental students it is certain to dilute the material for one or the other of the groups. Obviously, their interests are not entirely similar, and the primary object of teaching biochemistry to dental students is to acquaint *dental* students with the subject matter. Also, the time of presentation of the course appears to be of little importance, for 14 schools teach dental biochemistry in a different semester than that of the medical course, while about an equal number, 11 schools, teach it during the same semester. Apparently most

schools feel that their faculties and facilities are of such a nature that either method can be handled efficiently, both physically and academically, with good results.

The school in which the instructors' appointments are held appears to favor dentistry, since 14 schools, or 34 per cent, report that the instructor is a member of the dental school faculty, while 16 per cent are members of the medical faculty. However, 29 per cent of the schools indicate that the biochemistry instructor held appointments in both dentistry and medicine, while 24 per cent of the appointments are neither in dentistry nor medicine. The latter group are members of various other schools, two being members of the graduate school, two from the liberal arts colleges, one from pharmacy, one from physiology and three from a basic science service faculty. This latter group, those who are members of basic science service faculties, seems to be an increasingly popular faculty appointment, and it will be of interest to see how this phase of integrated education progresses. The fact that almost as many appointments are both in dentistry and medicine combined seems to indicate that the two professions can work together satisfactorily in the teaching of biochemistry if necessary or convenient. Each situation probably has its advantages and disadvantages, but it would appear important to have dentistry control, by faculty appointment, the teaching of biochemistry to dental students. It is probable that a member of only a moderately interested service school may not be as genuinely interested in the dental students' future were the instructor being supported, partly at least, by dental school funds, and dependent upon the dental dean for academic promotion.

Eighty-three per cent of the faculty members teaching biochemistry to dental students hold the Ph.D. in chemistry. Of the 17 per cent who do not have the doctorate in chemistry, two instructors have doctorates in dentistry, two in medicine, and two others are pharmaceutical chemists. One course is taught by an instructor with a master's degree only. Thus, it appears quite convincing that the faculty responsible for biochemistry instruction is well qualified to present the subject to the dental students, and it is to be expected from their qualifications that the nature of the instruction is of a good academic level.

Departmental separation is clearly indicated by the data furnished from this study, for 68 per cent of the dental schools have separate departments of biochemistry. Of the 13 schools which do not have separate biochemistry departments, 11 do not provide a separate budget for dentistry. These data indicate that department autonomy for bio-

chemistry is apparently preferred by most schools. Obviously, many schools have different budget problems, but it would seem that this separation would be helpful in many instances, due to the fact that oftentimes the allocation to dentistry suffers if dentistry must share departmental occupancy with a stronger school. If the basic science service system of instruction continues to gain support, departmental separation will decline in the future.

The answers supplied to questions 9 and 10 indicated that there has been little increase in the time allocated to teaching dental biochemistry in the last 15 years. The mean number of didactic hours was shown to be 50, with a range of 18 to 94. This is quite comparable to the range reported by Fosdick.[1] The number of hours devoted to laboratory study also has not changed materially, since these data indicate that the mean number of hours per semester for the 38 schools is 110, with a range of 36 to 192. The ratio of approximately two laboratory hours for every classroom hour appears evident from these data. The number of schools using auxiliary teaching methods, such as quiz sections, conferences, recitation sections, and separate lecture demonstrations is small. A total of 13 schools indicate that they have such additional auxiliary teaching aids, and of these, 10 schools use a recitation section with a mean number of hours of 14 and a range of 2 to 22. One school has six additional hours as unclassified, one other has 11 hours devoted to quiz sections, and a third 16 hours assigned to review conferences. Better use could be made of such teaching methods as quiz or recitation sections, since through the use of such auxiliary classroom hours the instructor can become more aware of the individual student and his learning difficulties. Furthermore, these additional hours provide the opportunity for the student to quiz the instructor, many times at great length and about details, or about topics too involved to devote lecture or laboratory time for an adequate explanation. This form of supplementary education in biochemistry should be evaluated more thoroughly in order to determine if this is not one manner of increasing the value of biochemistry for the dental student.

A most interesting aspect of this study was to find that there is a mean number of 3.5 full-time faculty members assigned to teach dental biochemistry. The range was from 1 to 12. The part-time senior faculty have a considerable representation also, with a mean number of 3.3 and a range of 1 to 10. The fact that an average of three and one-half instructors are devoting full time to dental biochemistry speaks very highly of the versatility of opinion presented to the dental students.

However, the common practice in undergraduate chemistry of utilizing the services of graduate students for laboratory assistance or in recitation or quiz sections does not appear to be common practice in dental biochemistry, since 93 per cent of the replies to question 11a were "no." There appears to be some increase in the utilization of junior personnel other than dental students, since 37 per cent of the answers to 11b were "yes" as compared to 7 per cent for 11a. This perhaps is reasonable, since the advanced years in dental school are devoted almost exclusively to clinical practice, usually requiring the full-time facilities of the student. Thus, it would seem reasonable that little time would be available for the dental student to devote to assistantship duties. Perhaps, though, by using dental students to a greater degree in such capacities it may be possible to stimulate more students to remain in dental education and research. There seems to be no real reason, except precedent, for not allowing the dental student who shows an early interest in dental education to take the last three years of his dental education in four years, while devoting the additional time as a laboratory assistant or to teaching a recitation or quiz section and finally, perhaps, to assisting in some preliminary teaching and research. The available time would not only provide the interested student with some modest financial support but would also give him needed teaching and research experience in an attempt to interest him in the importance of having qualified men remain in dental education.

In 78 per cent of the cases it was reported that the dental course was equal in thoroughness to that given to other students studying biochemistry. Also, a similar number of schools reported that a special effort is being made to slant biochemistry to dental problems. This latter topic is also one on which there are varying degrees of opinion. Many instructors feel that biochemistry should serve only as an introduction to other dental courses and, as such, should strive to teach only the fundamentals of chemistry, with the integration being made in more advanced dental courses. Others say, however, that the student should have the benefit of seeing the application to dentistry at the time a particular applicable problem in chemistry arises. However, if the latter view is held, the chemistry instructor must of necessity be directly acquainted with dental problems. Some schools apparently meet this problem by having the fundamentals of biochemistry presented as such by a chemist, with the dental applications usually separated into individual lectures by one educated in chemistry as well as in dentistry. It would be highly desirable if the instructors in the basic sciences could

possess both the Ph.D. in their specialty as well as the doctorate in dentistry.

The only topic about which there was almost complete agreement was relative to the physical facilities for dental biochemistry. Of all schools having two or more separate biochemistry courses, 93 per cent stated that the dental chemistry facilities were equal or superior to those of other facilities for teaching biochemistry. Several (35 per cent) stated they were identical or superior.

It is almost a universal complaint from those responsible for teaching dental biochemistry that the dental students do not have a sufficient background to adequately grasp the principles. The student's deficiency is most noticeable in a lack of quantitative chemical principles, organic and physical chemistry and mathematics. It is most interesting to note that in almost 60 per cent of the schools they require more than the basic minimum number of hours of chemistry required for entrance into dental schools. Apparently the deficiency in quantitative analysis and organic chemistry is universally felt, since of the 22 schools requiring more than the minimum number of hours, nine schools require additional organic chemistry, six quantitative analysis, and four a course in analytical survey. One school requires qualitative analysis and two some background in physical chemistry. It is a difficult decision to make in considering how this over-all situation may be corrected, since increasing the science requirements at the expense of the liberal arts courses has not met with a general degree of acceptance, and this probably is correct reasoning, since any real liberal arts training must of necessity be received in the undergraduate curriculum. To increase the over-all requirements in the undergraduate program has been suggested, and perhaps this eventually may be the answer, but temporarily it would seem advisable to require the dental students to take at least some additional training in either organic chemistry or quantitative analysis. Since the tendency in modern dental practice is more and more to use diagnostic aids,[2] a better appreciation of analytical chemistry is certain to be beneficial.

It was somewhat surprising to note that well over one-half of the dental schools teach nutrition as a portion of general biochemistry. This is additionally difficult to understand since it is generally felt that in a one-semester chemistry course, adequate time is not available for pure principles of biochemistry alone. Certainly nutrition is applied

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[2]Muhler, J. C.: "Suggested Improvements in the Utility of Auxiliary Dental Personnel," *J.A.D.A.*, in press.

biochemistry, but it appears that it would be difficult to adequately teach the students as much nutrition as they must have to practice proper preventive dentistry and also satisfactorily prepare them in biochemistry. Experience has adequately demonstrated that in the practiced principles of nutrition, considerable amounts of periodontal and dental caries can be prevented. This fact alone seems to justify the inclusion of nutrition as a separate course in the dental curriculum.

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Why you are born and why you are living depend entirely on what you are getting out of this world and what you are giving to it. I cannot prove that this is a balance of mathematical perfection, but my own observation of life leads me to the conclusion that there is a very real relationship, both quantitatively and qualitatively, between what you contribute and what you get out of this world.

—Oscar Hammerstein II

AN ADVENTURE IN CURRICULUM STUDY

B. FRANK GILLETTE, Ed.D.[1]

(When Dr. Gillette was appointed as Director of the Curriculum Survey at the University of California, College of Dentistry, it was suggested that his experiences might be written up for publication in the JOURNAL OF DENTAL EDUCATION. *Here they are—uncensored.*

We think Dr. Gillette did a splendid job on this survey and we feel that his comments, rough as they are on us in spots, should be made available to others. We hope the gentle reader will remember that "all the world is queer except thee and me and sometimes——."—Willard C. Fleming, Dean.)

A Curriculum Survey was carried on at the University of California's College of Dentistry during the first six months of 1954. In many respects the survey proved to be a real adventure for the faculty and alumni, and to a lesser degree for the undergraduate students.

The survey was purely a local affair, instigated at the behest of Dean Willard C. Fleming and the Faculty Advisory Committee. The analysis of the undergraduate program had its genesis in the desire to answer certain questions:

1. Is there a clear understanding by students, alumni, and faculty of the general *mission* of the College?
2. How clear and complete is faculty-awareness of the specific objectives of the *whole* program?
3. Does faculty awareness of objectives extend to important *attitudes* as well as to the usually accepted knowledge and skills?
4. Do graduates actually possess the kinds of attitudes, knowledge, and skills which the faculty officially endorses as its objectives?
5. Is the Curriculum set up properly to achieve those objectives? Is whatever Alumni discontent that exists based on the Curriculum itself or on "teaching"?
6. If, as is generally admitted, the Curriculum has just "growed like Topsy" over the years, has it grown logically? psychologically?
7. How can a faculty tell that it is doing an effective job of instruction?
8. What kinds of administrative machinery are necessary for promoting *continuous* study of the Curriculum.

The public admission that such troublesome questions existed did not imply that the California faculty suffered from any greater inadequacies than does any other faculty. Does not every school have similar uncertainties about its educational program? Few schools, however, have taken the time or had the courage to open their closet doors in search of curricular skeletons! Glossing over deficiencies and dismissing them with rationalizations ("there isn't enough time"; "dentists are poor teachers"; etc.) are much easier solutions.

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[1]Formerly Director, Curriculum Survey, University of California, College of Dentistry.

To answer the above questions and to develop a long-range curriculum study program wherein faculty, students, and alumni could join forces in a truly professional manner, the University launched the Curriculum Survey. A director, this writer, was chosen from the ranks of general educators, the assumption being made that an outsider and a non-dentist would possess more objectivity and a wider perspective, and thus be able to contribute more to a fundamental analysis of the program. A newly expanded Faculty Curriculum Committee maintained close liaison with the director and helped lay out the broad strategy of the survey. This committee also served as an intermediary between the director and the faculty.

The cordiality shown this outsider throughout the six months in which he lived with the faculty represented only one of the many pleasant aspects of his work. True, there were times when he felt he was "walking on eggs," but those times were most infrequent. The majority of the faculty appeared happy to participate actively. Their seven working committees and the overall Curriculum Committee insured from the very first that *many* of the faculty, both full-time and part-time, would be involved personally in the undertaking. This wholesale participation was a part of the overall philosophy, in recognition of the educational principle that long-enduring curriculum improvements are most likely to materialize when a faculty participates actively in the formulation of the curriculum it uses. Educators cannot work up to their professional potential unless *they* think through and arrive at their own conclusions on curricular problems.

The strategy, then, was to insure that the survey would not only serve an "investigative" function but an "educative" one as well. In fact, the latter function was probably even more important than the former. The success of this educative side of the survey will be measured best by watching the work of the faculty this year, next year, and the year after. How much attention do they *then* give to curricular problems—after the formal survey is but a memory? This is the real criterion of success, for unless a faculty has become oriented to its task as a whole, unless there is less partisanship between divisions of the faculty, and unless the faculty is optimistic about the possibility of improving educational practices, the educative side of the survey has surely failed.

At the time of this writing (August), considerable evidence exists to show that the survey was successful—if the above criterion is applied. The faculty has shown unmistakable growth in awareness of its total

task, there is much less partisanship (much more "we-feeling"), and considerable optimism has been demonstrated on the possibility of steadily improving the educational program. Is this only a spurt following the intense activities and stimulation of the survey, or will it be sustained for a number of years? This writer believes that it will be sustained.

The survey strategy also called for active participation by alumni, a strategy dictated by several factors:

1. The recognition that the contributions of graduates to an analysis of the program could not be duplicated by any other group.
2. The presence of a strong, professional Alumni Association.
3. A keen interest in the improvement of their Alma Mater's program by many individual graduates and the leaders of the Alumni Association.
4. An alert "Dean's Advisory Committee" of the Alumni Association—made up of non-faculty graduates and which already had a four-year history of supporting the Dean on important school-alumni relationships.

The Curriculum Survey received a vigorous, early impetus in its use of alumni resources by strong endorsements from the officers of the association, the Dean's Advisory Committee, and many individual graduates. These endorsements and support continued throughout the six months. Six alumni committees and the Advisory Committee participated actively and enthusiastically. Their help was constructive and sound, as was also true of the support given by many graduates through their correspondence and conferences with the director. Two opinionnaires were sent to graduates and replies in goodly numbers were received from all over the world.

What were the results of this use of alumni resources? In the first place, frank admissions of strengths and weaknesses upon graduation helped round out the picture of effectiveness of instruction. This information can only be guessed at when a faculty uses its own observations solely. The evaluation of attitudes is especially nebulous—and it was in this area that many of the alumni serving on committees were especially vocal. They spoke of ethics, of dentist-patient relationships, of dentist-dentist collaboration, of fee-setting, of "short cuts" leading to inferior dentistry, of narrowness in professional life, of lack of imagination—and a host of others. These were alumni talking about themselves and their fellow dentists.

Does the college have a responsibility for developing desirable personal-professional attitudes, of developing broader, richer persons whose lives have been enriched by educational experiences in the fine arts, the humanities, the social sciences? Does the college have any responsibility for helping develop practicing dentists who think rationally, who apply

scientific methodology to their problems, who are not merely tradesmen? On such questions, the alumni answer was unequivocal. Their college *does* have such responsibilities.

This reaction is at variance to the attitudes expressed by some of the faculty who said, in effect, that "such attitudes are desirable but not as critical as having the right skills and knowledge needed in practice . . ." or "there isn't room in an intensive professional program for those extra educational experiences. If the student hasn't acquired a broad, general education by the time he reaches us, there's no time to do anything about it." Or "If the student isn't well-adjusted personally and socially, what can *we* do about it?"

From the alumni point of view, the faculty perspective on its educational obligations has been too limited, too narrow. Graduates uniformly believe that the faculty should show more concern about the *total* well-being of students. Is this a pertinent conclusion? This writer believes it is—not only for the University of California but for other schools as well. It is as easy for instructors to forget that students come to college as *whole* organisms with physical, mental, emotional, financial, and social problems as it is for dentists occasionally to forget that they are diagnosing and treating *whole* patients—not just teeth alone.

How were *students* involved in the survey? To only a limited extent, unfortunately. If the writer were repeating the survey, he would establish much better liaison with the students, obtaining their participation earlier and more completely. Committees were set up in each of the classes, class meetings were held with the Director present, and a limited use was made of student opinionnaires, but none of these were as effective as they might have been. Individual conferences with students were of some value, but they tended too often to be gripe sessions only.

As a whole, students showed a disappointing level of leadership and maturity. Confronted with problems to discuss in committees, little originality or independence of thought was displayed. This inarticulateness and immaturity does not augur well for leadership in professional societies after graduation. The reasons for such lack of student leadership and independence appear to include: (1) the common practice in colleges of keeping students in a relatively passive role, the instructors being the more active and creative; (2) the tendency to treat with suspicion the novel ideas of the more non-conformist students; (3) the intense pressure of time on students, thus effectively denying time for class meetings, committee work, or seminars wherein student leadership is best developed; (4) the subtle, insiduous fostering of the idea that

dentists are "independent men," "rugged individualists"—thus effectively counteracting the need for *teamwork* in attacking problems; (5) the unfortunate growth of negative *attitudes* toward the faculty from freshman to senior years (one characteristic of which is the belief that students are on one side of a battle for survival and instructors are on the other).

So, for several reasons the Curriculum Survey was disappointing insofar as student participation was concerned. But, even though it is recognized that the strategy in using students in this particular survey proved to be inadequate, this need not be true in other curriculum studies.

The reader is probably restive with this account of the strategy and methodology of the survey at this point and is saying, "Yes, but what conclusions were obtained in the undertaking?" This is not the time or place to report the purely local conclusions, most of which were included in a final report submitted to the faculty last June. These local conclusions—and accompanying recommendations for improved practices in the program—covered such items as (1) breadth of objectives; (2) amount of relative emphasis given to the major areas of dentistry; (3) overlapping and duplication problems; (4) application of the biological sciences to clinical dentistry; (5) strengths and weaknesses in office management, psychology, diagnosis, treatment-planning, and other areas; (6) faculty insight on educational issues; (7) devices for professional growth of the faculty on educational matters.

Many of those local conclusions would undoubtedly apply to other dental schools as well, even though the detail would vary. Another category of conclusions almost guaranteed to be universal in scope includes: (1) the need for a well-organized, sustained contact with graduates for the purpose of discovering the needs of practitioners and of receiving their advice on curricular matters; (2) the need for better selection and training of the faculty *as teachers*; (3) establishing better devices for carrying on continuous curricular study; (4) the need for a better integration of basic biological science knowledge and skills with the learning needed in the clinic; (5) better use of the *total* educational environment at the college (including more than the formal courses).

What faculty limitations were brought into focus by the Curriculum Survey? Since these, too, appear to be more universal than local in character, some of the major ones are summarized:

1. A general tendency to think of a curriculum as consisting of only the printed courses. Other educational influences such as dental fraternities, student ADA, teacher-student relationships, and contacts with alumni were not generally regarded as parts of the curriculum.

2. An unawareness of the basic principles of education or educational philosophy. For many of the faculty such terms as the following were rather novel: inductive versus deductive teaching, experimentalism, instrumental learning, insight learning, cruciality of motivation, ego-image building.
3. A limited knowledge of the philosophy of evaluation. Few instructors seemed able to separate "grading" or "marking" from the total process of evaluation. The *validity* of evaluation techniques was too infrequently questioned.
4. A tendency to react to proposals for enrichment of the program by saying: "There isn't enough time" . . . or "It isn't practical."

It must be emphasized that the pointing up of such faculty limitations is done only for the purpose of promoting a stronger educational program so universally demanded by students and faculties. One could list many strengths of dental educators, not the least of which is the sincere dedication to teaching so characteristic of most of the faculty members. Certainly, such dedication to the difficult responsibilities inherent in educating tomorrow's dentists—accompanied as it is by a real willingness to work for self-improvement—outweighs by far the foregoing lists of limitations and weaknesses. But, since dentistry and dental education share the American tradition of believing in and working for progress, is it not better to admit deficiencies and then strive to correct them?

This brief glimpse at the Curriculum Survey is ended with an expression of deep appreciation for the many gestures of help provided by dental educators of many colleges. Their advice, coupled with the help of faculty and graduates of the University of California, made the survey a most enjoyable "adventure" in discovery of new insights. The voyage will be different and some of the discoveries unique in other waters, but other dental schools can enjoy similar adventures as they, too, embark upon all-out curriculum studies.

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CLINICAL EXAMINATION AND TREATMENT PLANNING CHARTS

A Survey Report

THOMAS R. ABBOTT, D.D.S.,[1] *Milwaukee*

A survey of the clinical examination and treatment planning charts of the various schools of dentistry was made in 1952. The fact that many schools have separate departments of pedodontics was realized, and it was felt that when a clinical examination or treatment planning chart of any school did not have a diagram of the deciduous dentition, it would be logical in making this study to use the pedodontic chart used by the school. Those instances in which the pedodontic charts were used have been noted under the various diagrams.

This report is not a study of the type or form of chart used in designating the various teeth, but rather, one of the systems of specifying the teeth by numbers or letters and of indicating the side of the chart or diagram as right or left.

Requests for clinical examination and treatment planning charts were made of 42 dental schools in the United States and five in Canada. Two schools did not answer the request; one school sent a package of many forms used but did not include a clinical examination and treatment planning chart or any other chart or diagram of the teeth; four schools replied that they could not send a clinical examination chart at the time because their charting systems were in the process of reorganization.

Clinical examination and treatment planning charts were received from 39 schools, 35 in the United States and four in Canada. These, in addition to the chart from our own school (Marquette University School of Dentistry) made a total of 40 charts from which to conduct the survey.

The study of the clinical examination and treatment planning charts of the 40 schools revealed 19 different systems of charting teeth. The largest group of schools using any one system was seven. There were four instances in which four schools each used another system, and three instances in which two schools each used still another system. There were eleven schools using charting systems individual to themselves.

The following are diagrammatic reproductions of the clinical examination and treatment planning charts being used by the schools. In certain instances the words "right" and "left" were written out and in other instances the terms were abbreviated with the letters "R" and "L".

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[1]Professor of Operative Dentistry and Director of Dental Clinic, Marquette University, School of Dentistry.

System #I

DIAGRAM OF PERMANENT TEETH

R i g h t		L e f t
	8 7 6 5 4 3 2 1 | 1 2 3 4 5 6 7 8	
	8 7 6 5 4 3 2 1 | 1 2 3 4 5 6 7 8	

DIAGRAM OF DECIDUOUS TEETH

R i g h t		L e f t
	E D C B A | A B C D E	
	E D C B A | A B C D E	

Used by seven schools. Taken from the pedodontic chart in one of the seven schools.

System #II

DIAGRAM OF PERMANENT TEETH

R i g h t		L e f t
	8 7 6 5 4 3 2 1 | 1 2 3 4 5 6 7 8	
	8 7 6 5 4 3 2 1 | 1 2 3 4 5 6 7 8	

DIAGRAM OF DECIDUOUS TEETH

R i g h t		L e f t
	V IV III II I | I II III IV V	
	V IV III II I | I II III IV V	

Used by four schools. Taken from the pedodontic chart in two of the four schools.

System #III

DIAGRAM OF PERMANENT TEETH

R i g h t		L e f t
	|	

DIAGRAM OF DECIDUOUS TEETH

	|	

Represents a diagram of the teeth without numbers or letters. Used by four schools.

System #IV

DIAGRAM OF PERMANENT TEETH

R i g h t	1 2 3 4 5 6 7 8	9 10 11 12 13 14 15 16	L e f t
	32 31 30 29 28 27 26 25	24 23 22 21 20 19 18 17	

DIAGRAM OF DECIDUOUS TEETH

R i g h t	1D 2D 3D 4D 5D	6D 7D 8D 9D 10D	L e f t
	20D 19D 18D 17D 16D	15D 14D 13D 12D 11D	

Used by four schools. Taken from the pedodontic chart in three of the four schools.

System #V

DIAGRAM OF PERMANENT TEETH

R i g h t	8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8	L e f t
	8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8	

NO DECIDUOUS DIAGRAM

Used by four schools.

System #VI

DIAGRAM OF PERMANENT TEETH

R i g h t	1 2 3 4 5 6 7 8	9 10 11 12 13 14 15 16	L e f t
	32 31 30 29 28 27 26 25	24 23 22 21 20 19 18 17	

DIAGRAM OF DECIDUOUS TEETH

R i g h t	A B C D E	F G H I J	L e f t
	T S R Q P	O N M L K	

Used by two schools. Taken from the pedodontic chart in one of the two schools.

System #VII

DIAGRAM OF PERMANENT TEETH

8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8
H G F E D C B A	A B C D E F G H

R i g h t — DIAGRAM OF DECIDUOUS TEETH — L e f t

V IV III II I	I II III IV V
e d c b a	a b c d e

Used by two schools. Taken from the pedodontic chart in one of the two schools.

System #VIII

DIAGRAM OF PERMANENT TEETH

R i g h t

1 2 3 4 5 6 7 8	9 10 11 12 13 14 15 16
32 31 30 29 28 27 26 25	24 23 22 21 20 19 18 17

L e f t

NO DECIDUOUS DIAGRAM

Used by two schools. Under "Key" on the chart of one of the schools is the notation, "Deciduous—capital".

System #IX

Left DIAGRAM OF PERMANENT TEETH Right

7 6 5 4 3 2 1	1 2 3 4 5 6 7
7 6 5 4 3 2 1	1 2 3 4 5 6 7

DIAGRAM OF DECIDUOUS TEETH

5 4 3 2 1	1 2 3 4 5
5 4 3 2 1	1 2 3 4 5

Used by one school. Taken from the chart used in the Children's Dentistry Department.

System #X

DIAGRAM OF PERMANENT TEETH

Right ——————— | ——————— Left

NO DECIDUOUS DIAGRAM

Represents a diagram of the teeth without numbers or letters. Differs from System #3 since there is no deciduous diagram. Used by one school.

System #XI

DIAGRAM OF PERMANENT TEETH

R	8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8	L
	H G F E D C B A	A B C D E F G H	

DIAGRAM OF DECIDUOUS TEETH

R	D5 D4 D3 D2 D1	D1 D2 D3 D4 D5	L
	DE DD DC DB DA	DA DB DC DD DE	

Used by one school.

System #XII

DIAGRAM OF PERMANENT TEETH

L	1 2 3 4 5 6 7 8	9 10 11 12 13 14 15 16	R
	32 31 30 29 28 27 26 25	24 23 22 21 20 19 18 17	

DIAGRAM OF DECIDUOUS TEETH

L	1 2 3 4 5	6 7 8 9 10	R
	20 19 18 17 16	15 14 13 12 11	

Used by one school.

System #XIII

DIAGRAM OF PERMANENT TEETH

Right	8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8	Left
	8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8	

DIAGRAM OF DECIDUOUS TEETH

Right			Left

The charting system of the deciduous teeth represents a diagram of the teeth without numbers or letters. Used by one school.

System #XIV

DIAGRAM OF DECIDUOUS TEETH

Right	D5 D4 D3 D2 D1	1D 2D 3D 4D 5D	Left
	D5 D4 D3 D2 D1	1D 2D 3D 4D 5D	

DIAGRAM OF PERMANENT TEETH

8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8
8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8

Used by one school. Taken from the chart of the Department of Dentistry for Children.

System #XV

DIAGRAM OF PERMANENT TEETH

L e f t	8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8	R i g h t
	8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8	

NO DECIDUOUS DIAGRAM

Used by one school.

System #XVI

DIAGRAM OF PERMANENT TEETH

16 15 14 13 12 11 10 9	8 7 6 5 4 3 2 1
17 18 19 20 21 22 23 24	25 26 27 28 29 30 31 32

Left DIAGRAM OF DECIDUOUS TEETH Right

J I H G F	E D C B A
K L M N O	P Q R S T

Used by one school.

System #XVII

DIAGRAM OF PERMANENT TEETH

R

1 2 3 4 5 6 7 8	9 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24	25 26 27 28 29 30 31 32

L

NO DECIDUOUS DIAGRAM

Used by one school.

System #XVIII

DIAGRAM OF PERMANENT TEETH

8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8
8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8

DIAGRAM OF DECIDUOUS TEETH

V IV III II I	I II III IV V
V IV III II I	I II III IV V

No right or left side indicated. Used by one school.

System #XIX

DIAGRAM OF PERMANENT TEETH

L e f t	8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8	R i g h t
	8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8	

DIAGRAM OF DECIDUOUS TEETH

L e f t			R i g h t

The charting system of the deciduous teeth represents a diagram of the teeth without numbers or letter. Used by one school.

In making this survey of the clinical examination and treatment planning charts of the various dental schools it was apparent that there may be different systems of charting teeth in the many departments of a school. It was also noted that although the clinical examination and treatment planning chart did not show it, there were methods of designating the teeth found in other forms. As an example, in my own school the deciduous chart of the clinic examination record does not designate the teeth by number or letter; however, we know that the deciduous teeth are designated by the Roman numerals I II III IV V.

Conclusion

Since the clinical examination and treatment planning chart is being used universally by dental schools and practitioners, it would seem that some consideration be given to the standardization of charting systems, at least, as far as tooth designation is concerned. Perhaps this project could be taken over by the American Association of Dental Schools.

ILLUSTRATIONS OF CASEWORK IN A DENTAL CLINIC

MARY W. BOARD, M.A.[1]

The function of the social caseworker in the Walter G. Zoller Memorial Dental Clinic has been described in a paper written by Phyllis Wexler and Elizabeth McKinley.[2] It gives a broad general picture of the clinic's philosophy and procedures, the problems with which the social worker attempts to deal, and the manner in which the worker functions. Four case illustrations of patients in the age range of adolescence are being presented in this paper to clarify further and to indicate the importance of the role of the caseworker in facilitating adequate dental treatment. The histories have been summarized and condensed from more detailed records to point up specific aspects in each case. Patients in this age range were chosen because their behavior and attitudes are a frequent source of bewilderment and concern to the adults (in this case the dentists), who must deal with them, and because adolescents themselves often feel misunderstood.

Adolescence is that crucial stage between childhood and adulthood when the individual is testing himself in the world of adults and attempting to establish his own identity as an adult. As in any period of life, a lack of success in coping with difficulties occurring during his developmental process, or in other aspects of his life situation, may diminish the adolescent's capacity to function in a specific area such as cooperation with a prescribed oral health program or a dental treatment plan. Obviously the dentist cannot be expected to have the knowledge and training to diagnose and cope with all the social and emotional problems which may confront his patients. However, a general understanding of needs, strivings and special problems in a given period of development can help him avoid aggravating or reinforcing existing difficulties, help him deal with his patient more effectively, and help him determine when the patient needs more specialized professional help than the dentist can give.

Dr. Irene M. Josselyn[3] has written at length about the characteristics and problems of adolescence. It may be well to bear in mind a few of her comments.

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[1]Caseworker, Walter G. Zoller Memorial Dental Clinic and Social Service Department of the University of Chicago Clinics.

[2]*Journal of Dental Education*, 17, 59; Mar., 1953.

[3]Practicing Psychiatrist and Psychoanalyst, Research Associate, Institute for Psychoanalysis, Chicago.

> "Adolescence is a physical phenomena. The emotional problems and emotional growth of this period have their origin in glandular changes that occur at pubescence and in the physical changes that result from this glandular readjustment. . . .
>
> "Synchronous with this change is a parallel change in the psychological structure. There is an intensification of the impulse to grow with the pressure directed toward an adult format.
>
> "The two most obvious manifestations of the psychological change fall into two general categories. First, there is the reawakening of sexual interest, now conscious, verbalized and acted out according to the mores of the peer group. Second, there is increased pressure from within to be freed of infantile dependency and to achieve adult status . . . the composite picture of this age is contradictory and confused."[4]

These manifestations are readily observable in the adolescent. There is, for example, the concern with appearance and the fear that his attire will differ from others in his group. In our clinical observations, we have noted the real suffering of the adolescent when dental care has not been provided for unsightly and defective teeth.

There is an important point to be emphasized in connection with the second manifestation of psychological change referred to above. In his strivings for adult status, the adolescent is not completely consistent. It is well known that he wants to feel like an adult and be treated like an adult, but at the same time, when the going is difficult, he wishes to reserve the privilege of reverting to the protected position of the child, without loss of self-esteem. This poses a challenge to those who deal with him and requires an understanding of his position in a given situation. The illustrations presented herein describe our efforts to deal with several kinds of problems. The role of the worker in each case has varied and in each case there was a mutual sharing of information and joint planning with the dentist.

Our first case illustrates the improvement in the relationship between the dentist and the patient when casework help was given with a problem which disturbed the patient, and shows how this help also improved the patient's adjustment in other areas.

The difficulties of this fourteen-year-old Negro girl were brought to the attention of the worker by the dentist because he had been asked by the school attendance counsellor[5] for a written recommendation for the

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[4] Josselyn, Irene M.: Psychosocial Development of Children, p. 93, Publication of Family Service Association of America.

[5] The function of the attendance counsellor is limited to dealing with problems of school attendance. In cases of habitual absence, he frequently refers the case to the adjustment teacher. The latter has the broader function of dealing with special problems of social and emotional maladjustment of the student and works in cooperation with the school psychologist and social agencies in the community.

patient's withdrawal from school for the remainder of the term (about six weeks). The suggested basis for the recommendation was the seriousness of Alice's dental condition and its treatment demands, although from the dentist's point of view there was no real basis for this. The counsellor gave as his purpose a desire to protect Alice and her teachers from having the former's failure on their records. He proposed a plan to arrange home tutoring if the withdrawal was effected. Because of his interest in sparing Alice the embarrassment of failure, the dentist was hesitant to refuse the counsellor's request without more knowledge of the situation. He asked the worker's help in getting this information and in making a decision. Concurrently, the dentist mentioned his concern that Alice might not care for her teeth when the long involved treatment process, then in progress, was completed. This concern stemmed from a previous history of neglect of the teeth and Alice's attitude in the clinic. He described her as a girl who bore painful dental procedures without complaint, but as apathetic, lacking in affect, and unresponsive to his overtures of friendliness. He wondered whether she was mentally retarded and mentioned his lack of enthusiasm for continuing her treatment unless he could have some assurance that she would cooperate with a preventive program in the future. The worker's help was also requested in encouraging such cooperation.

Alice had originally been hospitalized for treatment of a serious mouth and throat infection. When this subsided, she was referred to the dental clinic for management of many badly decayed teeth, including one upper front tooth, which had been broken for several years. Regular appointments once or twice a week were scheduled during school hours since the clinic is not open evenings.

A telephone discussion between the worker and school counsellor revealed that, since her hospitalization, Alice was frequently absent on the basis of minor ailments, in addition to the one or two half-days a week needed for clinic appointments. The counsellor was extremely unsympathetic toward Alice and made it quite clear that his chief purpose was to protect the teachers, not Alice. He conceded that the plan to arrange home tutoring was impractical, since, as the worker knew, this service was available only to those students who were *home-bound* due to illness or incapacity. It was agreed that no further action would be taken until the worker could discuss the matter with the patient and her mother.

Subsequent discussion revealed that Alice and her mother were very much concerned about the possibility of withdrawal from school. The

family had marginal economic resources, but academic achievement was highly valued. Four of the several children had managed to secure college credits by working hard to overcome economic obstacles. Alice herself seemed to accept the fact that she could not do college work because she was "slower" than her siblings. (An intelligence test, given in school some years before, showed her to be in the range of dull normal.) While she was unhappy about her limitations, she worked hard in school just to get a passing grade, and felt extremely uncomfortable over the prospect of being set even further apart from her siblings and her peers by being asked to withdraw. The mother was sympathetic with Alice and helped her feel acceptable in spite of her limited academic achievements.

In an interview with the social worker, Alice, who seemed to have a realistic conception of her performance, gave a frank, direct report of her school problem. She talked of her interest in continuing in school for the remainder of the year, in spite of certain failure to pass on to the next grade. She showed her desperate need to be accepted as an adequate person, in spite of her "slowness," and seemed to be attempting to maintain a feeling of self-esteem in the face of her failing school performance and the attitude of the school counsellor.

Contrary to the dentist's original impression, Alice was eager to have dental treatment. She talked of her unhappiness and resentment over friends' criticism of her parents for their failure to provide it. Typical of most adolescents, she was concerned about her appearance, and painfully aware that her broken tooth detracted from it. While she was protective in her attitude toward her parents, it was reasonable to assume that she had some resentment toward them and toward the circumstances which made needed dental care impossible, prior to her acceptance at the Zoller Clinic. When her feelings about the school problem and dental condition were understood, it was not difficult to see why she missed school on the basis of flimsy excuses.

On learning the circumstances the dentist agreed to refuse the school counsellor's request. A letter was then sent to the school by the worker describing the patient's distress at the recommendation for withdrawal, her desire for dental care and our plan to limit school day appointments and encourage regular school attendance. This letter was referred to the school adjustment teacher[6] from whom we learned that Alice's curriculum had already been adjusted to her interests and abilities. This

[6]See No. 5.

teacher agreed that Alice should stay in school and offered the child help with any school problems.

Alice then attended school regularly, and showed a greater feeling of security in general. When the school counsellor occasionally made sarcastic remarks to her she was able to deal with these without great distress. It was felt that the support given at the clinic and by the school adjustment teacher strengthened her capacity to do so. On her own initiative, Alice joined the school choral group. Prior to this time, in spite of interest in music, she had been too shy to join one of the school music groups.

The dentist reported an improvement in their relationship immediately after the worker's interview with Alice. He explained this partly on the basis of a more sympathetic feeling in himself due to a better understanding of her, and partly to a more positive and more responsive attitude in her. He commented on his misconceptions about the patient before he understood the entire situation. Alice kept appointments regularly and told of her eagerness to surprise her friends with her restored front tooth. Her interest in dental treatment and oral hygiene was maintained. My own contacts and a report from the adjustment teacher showed her to be happier and more outgoing, and in need of no further help.

Our second case describes a situation in which a fearful, insecure mother was unwittingly stifling the strivings for growth of her adolescent son, whom she criticized among other things, for lack of interest in oral hygiene. Her insecurity about his worth was actually related to her own feeling of depreciation. She was helped to see herself and her son more realistically, and, as a result, a happier relationship developed between them. In spite of her earlier fears, he cooperated with the dental program through a long period of intensive treatment.

Jack, a fourteen-year-old lad, was described by the physician as having a physical maturity of fifteen or sixteen years. The dentist, whose examination showed extensive caries, asked the worker's help in encouraging more effective oral hygiene and diet control. Jack had been known to our Pediatric Clinic since age five. His chief medical problem, when referred to the dental clinic, was major convulsions whose onset dated to about age 10. The convulsions were well controlled with medication.

Jack's mother, who accompanied him to the clinic, seemed eager to talk to the social worker. She described him as a slow moving, unambitious, provocative individual, disinterested in school work and per-

sonal hygiene, and generally lacking in interest in assuming responsibility for himself. She was concerned about the state of his teeth, and felt certain that he would not cooperate with oral health recommendations. The worker's original contact with the patient gave an impression of a self-conscious, conforming boy who was eager for approval, and who assured the worker he could follow dental recommendations.

Early observations of the worker, particularly the lack of understanding and sympathy in the mother toward her son, raised doubts as to the mother's capacity to give him constructive help in learning to assume responsibility or to deal with his problem. We were particularly concerned, since in addition to the normal developmental problems of the average adolescent, this boy had to deal with the practical and psychological aspects of his convulsions. It was decided that the caseworker would explore the situation further with the mother, maintaining only a casual contact with the boy, and that the dentist, a warm, understanding, outgoing individual, would make a point of showing an interest in Jack, conveying his confidence in, and liking for him as an acceptable, adequate individual. The two had friendly discussions, focused on Jack's interests, at the time of clinic appointments. Jack responded to this with enthusiasm. In addition, he immediately took responsibility for oral hygiene and diet control recommendations, much to his mother's surprise.

The worker had a series of discussions with the mother who was greatly concerned about school planning for Jack. He was in the eighth grade, where he was having pronounced reading and spelling difficulty and his performance in other courses was poor. His mother felt fairly certain that he would be graduated from the eighth grade (partly because his teachers thought a failure would be too discouraging for him), but there was considerable disagreement as to whether he could cope with work of the ninth grade level. The teachers recommended a vocational school, but the mother objected. This was partly a matter of pride, and partly a fear of courses involving the use of machines because of Jack's history of convulsions. His mother, who had been told when he was very young that he was "slow," was determined to get him through grammar school without failures. For years she had helped him with his homework, and in spite of his persistent efforts, had constantly prodded him to work harder. She was disturbed because Jack frequently got into difficulty with his teachers, who singled him out for criticism and punishment, at times quite unjustly. It was the worker's impression that Jack's passive, seemingly unconcerned attitude provoked and irritated the teachers. In addition, his precocious physical maturity,

which exceeded his emotional and social maturity, led the teachers, as well as other adults, to expect more mature behavior than would otherwise be expected of a boy his age.

Discussions with the mother showed her *excessive* need to be the adequate mother of an adequate son. Her feelings toward him wavered according to his accomplishments and behavior. When he got into difficulties with his teachers, or was criticized by others, she was angry and depreciating towards him. When she realized that he had been criticized unjustly, or when positive aspects in his behavior or personality were pointed up by others, she was angry at his critics, and talked of her great love for him. Contrary to her original description of him as a lazy, unambitious boy, the mother described his skill in manual work and his usefulness about the house. While she talked of his refusal to assume responsibility, she actually gave him no opportunity to do so. She attempted to control his every movement for fear he would make a poor decision and neighbors would think she was a poor mother. This need to control was carried into other areas in which her judgment was not competent. For example, when phenobarbital was first prescribed for his seizures, she discontinued this medication without consulting the physician because it made her son "dopey." Her fears led her to be over-protective, and she talked of her wish to arrange an "easy" life for him. The most bizarre example of this was her inquiry of the social worker as to whether it might not be feasible to provide him with depilatory cream to remove the fuzz from his face rather than have him begin shaving.

It seemed to the worker that Jack was a confused boy whose mother fostered dependency in him by her oversolicitous, rigid, controlling attitude, and that his general lack of initiative was partly a passive resistance to her control. An attempt was made to help her see that her behavior stifled his strivings for emotional and social growth, and that there would be no serious consequences if she allowed him to make some of his own decisions. With support in the form of reassurance concerning her own worth, she was able to see that her own feeling of adequacy need not hinge on his every success or failure. As a result, she gradually began to relinquish some of her controls over him. This was helped by the worker's efforts to reinforce the mother's feeling that Jack was an acceptable individual.

Before school plans could be made, an accurate appraisal of Jack's capacities, aptitudes, and functioning level was necessary, since it was not certain whether his learning difficulties were chiefly due to limited

mental endowment, or to emotional factors. Since our clinic facilities could not meet the comprehensive testing requirements, a psychiatric and psychological evaluation at a child guidance clinic was recommended. The mother was eager to know from a competent authority whether Jack was "normal" or otherwise, and accepted the plan.

The child guidance agency had a long waiting list and it was several months before the mother and patient could be seen. In the meantime, Jack was graduated from the eighth grade (although his work was not at a satisfactory level) and had begun his first term in a standard high school. He was immediately happier in the new school, where he made a fresh start and where he did not feel hemmed in by negative feelings of teachers such as had been built up over the years in the elementary school. A subsequent report from the child guidance agency showed that emotional factors might have interfered with Jack's performance in the past, but that they did not at the time of testing seem to be significant in his remaining reading difficulties. Psychological tests showed an IQ of 96, indicating that he had sufficient intelligence to keep up with his school work. The convulsions, which seemed to be well-controlled, were not considered a vocational handicap. After the psychological testing and psychiatric evaluation, the child guidance agency arranged special tutoring in the high school to enable Jack to catch up, and the mother was discouraged from taking over his home work.

A striking difference was seen in the bearing and attitude of the patient. He became more confident and sociable, in contrast to his previous self-consciousness and shyness. His mother was pleased by his new interest in appearance, his continued interest in oral hygiene and his widening interest in other areas. She talked of his increased cooperativeness at home. At the end of his first term in high school, Jack made better grades than he had ever before. Obviously the change in schools made a great deal of difference to Jack, but it was our feeling that our own efforts had also been contributory. The dentist's acceptance of him as an adequate individual was a factor, and the worker's help to the mother contributed to her change of attitude toward the boy. She could now say with confidence that Jack was a "normal" boy. The mother made steady progress in relinquishing controls over him and was able to overcome her previously excessive concern about his convulsions as a vocational handicap. She subsequently described the home atmosphere as completely different, and indicated in many ways her ability to be consistently supportive and constructive in her attitude toward him. The dentist reported Jack's continued cooperation with the

oral health recommendations, and expressed satisfaction over the boy's renewed impetus for social and emotional growth and the mother's more sympathetic attitude toward him.

Our third case illustrates two points: (1) the manner in which the attitude of a mother toward clinic personnel was improved after she had established a reputation in the clinic as being very "difficult"; (2) the manner in which the personality of the dentist played into the personality problems of an adolescent patient, together with the steps which were taken to alleviate the situation.

Marie, age twelve and one-half, was referred to the worker after she had angrily and tearfully pulled out of her mouth a tray with which the dentist was attempting to take an impression for study models of her teeth. Perturbed at this disruption of his efforts, the young dentist requested that the mother be interviewed in an attempt to secure better "cooperation" before treatment was resumed. Marie had been seen in the dental clinic at irregular intervals since the age of seven and was being followed in Pediatrics for supervision of a diabetic condition. Although the diabetes was fairly well regulated, there was some concern on the part of the physician because Marie failed to report for regular medical examinations. The usual explanation was lack of funds. The mother had established herself in the thoughts of the dental clinic staff as a critical, demanding individual with whom it was difficult to deal. However, continued dental treatment was being given because of the dentist's concern for the girl.

Just three months before the family was brought to the attention of this worker, the mother had had a series of angry telephone discussions with a resident, an attending man, and the Chief of the Dental Clinic, because basket crowns applied to Marie's teeth were made, in part, of gold and there had been no prior discussion with the mother. Actually she rarely came to the clinic with Marie and the dentist had had no opportunity to talk with her. This furor had ostensibly subsided when the episode prompting referral occurred.

Marie came to the worker's office in tears complaining of her fear of the dentist who, she said, had hit her. (He reported that he had made a sudden and automatic gesture to restrain her from removing the tray.) Marie further complained of a long wait for the dentist, who was behind schedule. She complained of being hungry and fearful of an insulin reaction, as well as fearful of gagging during the procedure involved in taking the impression. Apparently these feelings had not been communicated to the operator, who was intent on completing his

task. Marie asked to be transferred to another dentist, and generally felt she had been abused. Needless to say, the mother was very disturbed by this incident. Although the worker's telephone request for an interview was based on a desire to help work out difficulties with the clinic, the mother expressed resentment at the idea of coming in to be "talked to" about Marie. She brought out her previously expressed feeling that the attitude of clinic personnel was negative because dental care was free, and talked again of the episode in connection with basket crowns.

The worker had three telephone conversations with the mother before she finally kept an appointment. In each telephone discussion, the mother's attitude was at first stormy, accusing, and critical. Each time she calmed down and talked in a more realistic manner as she found that her tirades did not provoke criticism or hostility in the worker, who attempted to convey a feeling that she was sympathetic to the patient and the mother. After cancelling two appointments, the mother came in when a third was arranged. Her attitude in the interview was apologetic and cooperative. She attributed her attacking attitude to her anticipation of criticism and reprisals whenever difficulties with anyone arose. Before she could relax with the worker, she needed a great deal of assurance that Marie was not discriminated against, as well as much interpretation of the free clinic set-up, and of our interest in giving help. When she seemed satisfied on this score, the mother described her total situation which was very distressing.

To sum this up briefly, the mother was a 30-year-old woman who had married, at age 16, a man who was then 21. His financial contributions to the family had been inadequate during most of the marriage. This seemed to be in part due to the vocational handicap of congenital blindness in one eye, and in part to his inability to assume any great amount of responsibility. There was constant quarrelling between the parents, often because of the husband's failure to assume responsibility for the three children. The family was, and had been for years, in debt to loan companies, in spite of the fact that the mother was regularly employed on a full time basis. On the one hand, she blamed her husband for many of the family's problems, but on the other, was protective of him. Because of his physical handicap, she desperately tried to shoulder the major burden of family responsibility, but was bogged down in the process. Her husband seemed to be in competition with the children for attention from her, while she seemed to have no source of gratification for herself. She complained of "colitis" due to "nerves," but was not under regular medical care, partly because of pessimism about the

possibility of relief from her symptoms. She resented the need to work, seemed all but exhausted, and expressed guilt over neglect of her children because of her absence from them during the working day. She felt she had to "make it up" to them by always being cheerful at home and by making numerous sacrifices to meet their material needs. She had strong feelings about their problems which she had never revealed to anyone outside the family. At her job as a telephone operator, she was under great stress because of the discipline required, but she prided herself on her ability to keep up an appearance of "cheerfulness" there also. Her discussion revealed that Marie was in many ways a fearful girl who refused to reveal to friends or teachers that she had diabetes. The mother pointed up Marie's fear of people in authoritative positions (such as teachers) and was aware that Marie had not been comfortable in the relationship with her dentist.

Discussion with Marie revealed her beginning interest in members of the opposite sex. However, it also revealed her apprehensiveness as to whether she was acceptable to them, and her hesitancy about permitting any relationships to develop. It seemed apparent that she was not yet ready to tolerate close relationships with young male acquaintances. It was the worker's impression that one important factor in Marie's difficulty in the clinic arose from the fact that her dentist was young, personable, and unusually warm and friendly in his dealings with his patients, and that his *seeming* personal interest in her was a source of anxiety. The crisis prompting referral was precipitated when the realistic circumstances described in connection with the procedure of taking an impression were superimposed on the tensions which had accumulated within her over a period of time.

In the light of these conclusions of the worker, and with the original dentist's concurrence, Marie's dental care was transferred to an older man who was also warm and friendly, but who was definitely more of a "father figure." An excellent relationship developed between them and dental treatment proceeded without incident for many months.

The mother was encouraged to avail herself of casework service from a family agency equipped to deal with marital and family problems. Unfortunately, she had an unrealistic need to handle her problems alone, and the family situation did not improve. However, the mother's attitude remained consistently aligned with the clinic rather than against it, and Marie remained under regular dental supervision for many months without further incident.

Our last case illustrates more directly the effect of socio-emotional

factors on the patient's ability to follow oral health recommendations.

Rosalie first came to the attention of the social worker at the age of fifteen when dental examination showed an increase in carious activity. Prior to that time she had had few cavities, and there had been no concern on the part of the dentists about her oral hygiene or her ability to avoid excessive use of sweets. Because she was rather guarded with the dentist in discussing her diet at the time increased caries was noted, the social worker was asked to discuss this with her to determine whether sweet intake had become excessive. This discussion revealed frequent use of sweets between meals when she was often hungry, and also revealed that she never ate breakfast. She was encouraged to eat three meals a day and advised on substitutions for sweets, if she felt that she needed snacks between meals. She reported in follow-up discussion between her and the social worker that she was eating breakfast regularly, and was limiting sweet intake.

The worker found Rosalie to be a shy lonely girl who was reluctant to talk about herself. However, it was learned that her parents worked on different shifts, and she had to assume much responsibility for the home and three younger children. She complained of her father's objections to any friends who came to the home and of her mother's "nervousness." She expressed a wish that her mother would assert herself against the father on her behalf, but was attempting to resign herself to the realization that her mother would not do so. She had been promised permission to start dating at age 16 and hoped that life would be less lonely then. In the meantime, she did not wish to continue discussions with the worker.

About fifteen months later (by which time Rosalie was seventeen), dental examination showed marginal gingivitis, due to vitamin C dificiency. The dentist was concerned because of the condition of the gingivae, and because of Rosalie's information that she ate only one meal a day. He stressed the importance of three well-balanced meals a day.

The worker's subsequent discussion with the patient brought out the fact that she did not eat regular meals at home, because she lost her appetite when she was angry—and she was angry much of the time. She was less reticent than previously about discussing the situation, and more detailed information was secured. The family lived under very crowded conditions in which Rosalie had no privacy. She expressed resentment over the fact that her siblings, the youngest of whom was three, rifled her most prized possessions, and there was no place in

the home where she could have a little privacy. She had a great deal of uncomfortable feeling toward her father who appeared to be impulsive, infantile, and demanding. He was described as overly-critical of any boys who showed interest in Rosalie. They consequently were afraid to visit when the father was present. The mother, who in conversations with Rosalie expressed disagreement with the father's attitude, was too fearful to take issue with him directly. In order to avoid arguments with him, she never expressed her preferences on a given matter, even when he requestd her advice. However, she became greatly concerned about some of his decisions and actions and expressed this concern to the patient. This concern of the mother, who had had a "nervous breakdown" two years before, disturbed Rosalie. She felt caught between the parents in their relationship, and expressed her feeling that she could never "win" because her parents used her as a pawn in their difficulties. If the mother approved some wish of hers, the father disapproved and vice versa.

It was clear to the worker that this patient would have difficulty in eating three healthful meals a day as long as she felt so distressed. She presented the pathetic picture of a lonely adolescent, who was given no support or consistent guidance from her parents, and who seemed to be turning on herself the anger she felt towards them and towards the circumstances in which she lived. She was obviously afraid of asserting herself on her own behalf, and seemed to be desperately wanting her mother to help her. It seemed highly unlikely that either her father or her mother could understand her needs, or could give her much recognition as a worthwhile person. Because an accepting adult of the same sex, who can give consistent support and guidance, is an important figure in the life of the adolescent, it was decided that the social worker would attempt to develop such a relationship with Rosalie.

The situation was discussed with the consulting psychiatrist who helped outline a plan of casework treatment, and who clarified and supplemented the worker's understanding of the social and emotional factors in the case. He confirmed the worker's impression that Rosalie had identified herself with the fearful, self-punitive aspects of her mother's personality. As a result, she had an underlying feeling that she was "bad" if she showed anger, or if she made aggressive efforts to seek what she wanted. He indicated that her eating problem would probably disappear if she could be helped to accept the idea that it is not wrong to be angry. He suggested that the social worker take a positive approach toward the patient by encouraging her to express her feelings, and by

acknowledging that she had a right to seek satisfactions in her own life (a contrast to the mother's example of fear of self-assertion and self-expression). He also suggested that in dealing with Rosalie, the worker avoid making her feel she's "bad," if she could not follow prescribed recommendations. Instead, she was to be encouraged to cooperate with the program on the basis that she, as a mature woman, would want to do so, and she wanted to be attractive, etc.

The worker to date has had several contacts with the patient, who has responded to the interest shown in her. She requested an appointment with the nutritionist to secure a better understanding of dietary requirements. She subsequently reported that she had aroused the interest of a group of school friends in giving attention to their diets, and she was securing a good deal of pleasure in talking with them about nutritional problems as they lunched together. Rosalie also reported that she was regularly eating three meals a day. She had discussed the matter with her mother who also was taking more interest in Rosalie's diet. In the meantime, the dentist reported marked improvement in her gingivitis. It is not clear as yet whether Rosalie can maintain her present interest without continued support from the worker and the nutritionist. It seems likely that this support will be necessary at least until such time as she is through school and can leave the disturbing influences in the home.

Discussion

These illustrations clearly demonstrate that a patient's response to the dental program is related to social and emotional factors in his total life situation, and that the trained social caseworker has an important contribution to offer the dentist in helping him deal with his "problem" cases. Each human being, *in every age group*, has his own feeling and attitudes, capacities and limitations, as well as his own specific realistic circumstances. These must be recognized and considered when his response to the medical or dental program is evaluated. There is a growing awareness among members of the healing professions that negative aspects of the patient's total life situation not only influence his response to the recommendations, but at times are the real source of his physical complaints. It is important for the therapist to understand the characteristics of human behavior in the normal developmental process. It is also important to recognize unhealthy behavior symptoms of the individual whose stresses are beyond his capacity to tolerate or to deal with effectively. While the physician or dentist cannot be equipped to cope with all the social or emotional problems presented

by his patients, his understanding of human behavior can give him a better perspective of the symptoms with which he is dealing, and alert him to seek help from those who are equipped to give it. The patient's socio-emotional problems may not always be as readily recognizable as those seen in our case illustrations, since they exist in varying degrees and forms in different people. For this reason, the physician or dentist must be on the lookout for indications of them.

A concerted effort is made in Zoller Clinic to orient the dentist to such observation. Although our case illustrations have been limited to a specific age group, the caseworker in this clinic has worked cooperatively with the dentists in dealing with patients in every age.

The training of the caseworker is geared to an understanding of human behavior, and the implications, both positive and negative, of the social milieu. In practice, he focuses on the needs, feelings, and difficulties of the patient, and is, therefore able to elicit a freer description and expression of the patient's specific situation. While the physician or dentist is necessarily in an authoritative position, the caseworker is aligned with the objectives of the dentist (or physician), but assumes a non-authoritative role. It is thus possible for him to determine more objectively the nature of the help which is indicated. With this added understanding, the dentist (or physician) and the social worker can plan for and with the patient according to his individual needs. The worker's function will vary in each case according to the problem and the capacity of the patient to use the help offered by the worker, or made available through other resources. Often the patient is enabled to cooperate more fully with the prescribed program. Occasionally there is the satisfaction of knowing that the patient has been helped to achieve an important growth experience.

It is not facts but the ability to find and master facts which marks the free and educated man. —Ruth Mary Weeks

Program of Section Nd. Dentistry, American Association for the Advancement of Science

To be held at

UNIVERSITY OF CALIFORNIA, BERKELEY, CALIFORNIA

Program Chairman, WILLARD C. FLEMING
University of California, College of Dentistry

TUESDAY, DECEMBER 28, 1954

ROOM 100, LEWIS HALL

MORNING SESSION. Symposium: "Growth and Development."

WENDELL L. WYLIE, University of California, College of Dentistry, *Presiding.*

9:00 A.M.—"Role of Inheritance in Craniofacial Morphology," RODNEY MATHEWS, University of California, College of Dentistry.

9:45 A.M.—"Effects of Post-natal Environment on Facial Forms," ALTON MOORE, University of Washington, School of Dentistry.

10:30 A.M.—"Present Status of Knowledge Concerning the Cleft Palate Child," ROBERT M. RICKETTS, formerly with the University of Illinois, College of Dentistry, now in private practice, Pacific Palisades, California.

11:15 A.M.—"The Effect on Humans of Stannous Fluoride in a Dentifrice as an Anti Carrogenic Agent," JOSEPH C. MUHLER, University of Indiana, School of Dentistry.

12:15 P.M.—Luncheon. Faculty Club, Berkeley Campus.

AFTERNOON SESSION. Symposium: "Radiation Hazards in the Dental Office."

GORDON M. FITZGERALD, University of California, College of Dentistry, *Presiding.*

1:30 P.M.—"Hazards of Dental Radiography" (motion picture). National Bureau of Standards.

2:00 P.M.—"Types of Injuries and Tissue Damage from Low-Energy Ionizing Radiation," R. LOWRY DOBSON, Radiological Safety Division, University of California.

3:00 P.M.—"Radiation Hazards of Concern to the Dentist," WILLIAM E. NOLAN, Radiation Laboratory, University of California.

3:45 P.M.—"Radiation Protection Procedures in Dental Practice," GORDON M. FITZGERALD.

4:30 P.M.—Summation: B. V. A. LOW BEER, University of California, Medical School.

This program is co-sponsored by the International Association for Dental Research, North American Division, the American College of Dentists, and the American Dental Association.

COLLEGE NEWS

University of Illinois:

A symposium entitled, "Higher Handpiece Speeds in Restorative Dentistry," presented by the Chicago Academy of Dental Research, was featured at the annual Homecoming of the University of Illinois College of Dentistry on October 27th.

Chairman of the panel was Dr. Robert W. Laff. Other members were Dr. Wilbert G. Gordon, Dr. Marvin I. Waller, and Dr. Dayton B. Berk. Departments of the College of Dentistry and the Chicago Academy of Dental Research sponsored table clinics and demonstrations.

A luncheon preceded the symposium and a social hour was held in the Chicago Illini Union. Homecoming program chairman was Dr. Robert B. Underwood. Dr. Joshua S. Vission is president of the Dental Alumni Association.

State University of Iowa:

A five-day postgraduate course in Dentistry for Children is announced for January 17-22, 1955. The course is designed to assist the general practitioner of dentistry in treating the variety of problems encountered in the practice of dentistry for children. Emphasis will be placed upon the practical psychological management of the child as well as the various technical procedures currently utilized in the field of pedodontics. A well-balanced program of clinical practice in the Children's Clinic will allow the participant to experiment with concepts and technics presented in lecture and seminar meetings.

Enrollment limited. Fee $25. Mail applications to Dr. Kenneth E. Wessels, Department of Pedodontics.

College of Medical Evangelists:

Registration for 48 freshmen in the School of Dentistry of the College of Medical Evangelists (Loma Linda, California) began on August 29th. This was the second class to be enrolled in the recently established school, making a total of 88 students this year. The dental students are among a total attendance of 700 enrolled in the various schools of the college.

Remodeling of temporary quarters for the School of Dentistry, costing $20,000, was completed in time for the opening of classes on September 1st. The school will be located in the temporary quarters until a million dollar school of dentistry unit, now under construction, is completed and ready for use in September, 1955.

Three new members of the faculty have arrived on the Loma Linda campus. Dr. Harold Schnepper, instructor in operative dentistry, has been assistant clinical instructor of operative dentistry at the University of Washington. Dr. Melvin Lund, instructor in operative dentistry, just received a Master of Science degree from the University of Michigan. Dr. Elizabeth Zwemer, who received a Master of Science degree in orthodontia from Northwestern University, is instructor in orthodontics.

New York University:

Chancellor Henry T. Heald of New York University has announced a grant of $500,000 from the Murry and Leonie Guggenheim Foundation to establish an institute of dental research as part of the university's College of Dentistry.

The new unit will be known as the Murry and Leonie Guggenheim Institute of Dental Research and will be housed in a seven-story building owned by the university at 339 East 25th Street.

Some of the pressing research problems which will be investigated in the institute are: Inflammatory lesions of the mucous membranes, nutritional factors and deficiencies in dental disease, dental caries,

etiologic factors of periodontal disease, dental materials in relation to tissue tolerance, electron microscopic studies, study of radioactive materials, dental therapeutics and antibiotics, anesthesia, the endocrine system as it relates to general and dental disease, and the relation of oral pathology to rheumatic heart disease and bacterial endocarditis.

Ohio State University:

An Oral Diagnosis Teaching Conference for the discussion of curricula was held at the College of Dentistry, September 13-14, under the joint sponsorship of the university and the Procter & Gamble Co. of Cincinnati.

Chairman of the conference was Dr. John Barr of Tufts College. Dr. Hamilton B. G. Robinson, Ohio State, served as vice-chairman.

Other participants included: Drs. Wendell L. Bartholdi, Minnesota; Emmanuel Cheraskin, Alabama; William O. Goggin, Loyola (New Orleans); Steve Kolas, Ohio State; Frederick L. Jacobsen, University of Washington; H. R. MacLean, Alberta; Bruce H. Rice, Medical Evangelists; S. Hunter Rosenthal, Temple; Harold M. Syrop, Medical College of Virginia; and Patrick D. Toto, Loyola (Chicago).

Drs. Wendell D. Postle, Morgan L. Allison, Carl O. Boucher, William Lefkowitz, Lyle S. Pettit, Benjamin H. Williams and John R. Wilson, all of Ohio State, served as consultants.

In addition to developing a curriculum for teaching oral diagnosis, the group reviewed the kinescope, "Cancer of the Oral Cavity," produced by the American Cancer Society, and heard an address by Dr. Bertil Hallert, Swedish research associate with the Mapping and Charting Research Laboratory at Ohio State. Dr. Hallert spoke on "Principles of Stereoscopic Photogrammetry and Some Applications to Medicine."

As a result of the conference, the group plans an annual seminar on oral diagnosis teaching for the faculty members in various schools.

University of Pennsylvania:

Graduate studies in oral roentgenology, oral surgery, oral pathology and orthodontics leading to the degree of Master of Science are offered in the graduate school of medicine. For information write to the Dean, Graduate School of Medicine.

Services of the caries control laboratory of the school of dentistry are available to the practicing dentist as a source of authentic information on controlling dental caries and as a center for examining saliva for lactobacilli. Details are available from the caries control laboratory.

The department of oral pathology offers a biopsy diagnosis service. Information is obtainable by writing to the department.

Postgraduate courses for the year 1954-55 are offered in airbrasive technic, complete denture prosthesis, crown and bridge prosthesis, dental assistants' course, dentistry for children, endodontics, general anesthesia in dentistry, oral cancer, oral diagnosis and roentgenology, conference in oral medicine, oral surgery and anesthesia, orthodontics, partial dentures and periodontal therapy. For details write to the Director, Postgraduate Courses.

College of Physicians and Surgeons:

Postgraduate-refresher courses during the Fall, Spring and Summer terms, 1954-1955, are offered in cavity preparation and precision casting, dentistry for children, local anesthesia with related anatomy and preoperative-postoperative medication, endodontics, periodontics, tooth guidance, oral roentgenology, full denture prosthetics and airbrasive technique.

For information write the Postgraduate Department, 344 Fourteenth Street, San Francisco 3.

University of Pittsburgh:

The appointment of William F. Swanson as Dean of the School of Dentistry was announced early in July by Chancellor Fitzgerald and Vice-Chancellor Moore. Dr. Swanson has served at the University of Pittsburgh since 1920 except for a year and a half of private practice. He has been professor of histology and bacteriology since 1946, was named associate dean in 1947 and acting dean after the death of Dean Lawrence Van Kirk on August 26, 1953.

Dr. Swanson is a graduate of Pennsylvania State University, where he received his Bachelor of Science Degree, and the University of Pittsburgh, where he received the Doctor of Dental Surgery and Master of Science degrees.

Dr. E. A. Saeger has resumed his duties with the operative department after a year's absence as secretary of the Odontological Society of Western Pennsylvania. Drs. A. M. Gosnell and Richard Ribisl have returned to the crown and bridge department and Drs. H. J. Zubrow and R. M. Verklin to the oral surgery department, the latter having completed their tour of military service. Dr. George Toothman returned to the orthodontic department after an absence during which he earned his Master of Science Degree. Dr. Gerald Cox of the research department will teach biochemistry. Dr. Adam Lesko has joined the staff of the histology and pathology departments.

Professor S. Wah Leung and assistant professor Merle Christy were elected to faculty membership in Omicron Kappa Upsilon and associate professor Eleanore Reed to honorary membership.

During the past year, the following faculty members have earned graduate degrees: Dr. Leonard Monheim, Master of Science; Dr. Kurt Odenheimer, Master of Education; Dr. O. J. Reckard, Master of Education; Dr. Robert H. Stiff, Master of Education; Dr. George Toothman, Master of Science.

The graduate school has enrolled 20 students in the dental division studying toward Master of Science degrees; seven in oral surgery, eleven in orthodontics, one in anesthesia, and one in prosthesis.

The postgraduate department has enrolled six students for 12 months' residency in general anesthesia for oral surgery.

Excavation for the new $15,000,000 Health Profession Building was started in June as part of the university's $50,000,000 building program currently under way. This building will house the schools of dentistry, medicine, nursing and pharmacy.

During the year 1953-1954 the Dental School Alumni contributed $11,084 to the University Alumni Giving Fund.

Temple University:

A course consisting of lectures, seminars and clinical demonstrations in "Clinical Occlusions," by Dr. Lewis Fox of Connecticut, has been announced for January 26, 27, 28, 1955. The course is designed to present the fundamentals of occlusion in relation to the physiology and pathology of the periodontal supporting tissues. The entire course will be directed toward correlating the principles of occlusion to clinical criteria and therapeutic endeavors.

Limited to twenty-five persons. Tuition $150. Mail applications to Dr. Louis Herman, Director of Postgraduate Studies.

Washington University:

Postgraduate courses in complete denture prosthetics, crown and bridge prosthetics, radiodontics, pediatrics, anatomy of the head and neck, diagnosis and oral medicine, occlusal equilibration, oral surgery and partial denture prosthetics are announced for the Fall of 1954 through the Spring of 1955. For details write to the dean.

BOOK REVIEWS

Through Alaska's Back Door, by Bernard Francis Ederer, D.D.S. 162 pages, 23 illustrations. Vantage Press, Inc., New York, 1954, $3.00.

"Now the Northern Lights have seen strange sights
But the strangest they ever did see,
Was that night on the marge of Lake LaBarge
When I cremated Sam McGee."

This reviewer opines that high on the list of other strange sights was the picture of a bearded California dentist and his youthful companion doing what the old-timers said couldn't be done.

Dr. Ederer, a native of Minnesota and a graduate of Marquette, journeyed by canoe down the McKenzie River to the Arctic Ocean, then over the Continental Divide to the Yukon in Alaska, to Whitehorse and on to Skagway and Juneau. This was truly through the back door to Alaska.

During his youth and even in the twenty years of his practice in Minnesota Dr. Ederer went in for fishing, canoeing and hunting in the Northwoods. There was always the urge to go farther north. This book is the narrative of this dream come true.

Dr. Ederer was no tyro in the out-of-doors and a good thing, for the great Northwest is no place for the inexperienced, as this book points out time and again. The book is liberally illustrated with the author's photographs. The narration ranges from a close brush with death on the Giant River to an exciting white whale hunt with the Eskimos. Included is an account of self-surgery and an extraction clinic at Fort Yukon. Scattered throughout the book are descriptions of the people, both Eskimos and white, who inhabit this world.

This reviewer recommends this book to those who are "chair bound" but can still dream of far away places.

—Willard C. Fleming.

Periodontia. *Clinical Pathology and Treatment of Periodontal Tissues,* by Edgar D. Coolidge, B.S., M.S., D.D.S., LL.D., and Maynard K. Hine, M.S., D.D.S. Second edition, 384 pages, 424 illustrations on 250 figures and two color plates. Lea and Febiger, Philadelphia, 1954, $7.50.

This text is the product of the combined effort of two authors who are in near agreement in their interpretation of periodontal diseases. The objective was to present an up-to-date text for dental students and practitioners, in which the fundamentals and principles of the periodontal disturbances are clearly defined without entering too deeply into controversial problems. The material used has been accumulated during many years of practice, research and teaching by the authors.

The book, consisting of fourteen chapters, is divided into four parts. There are three hundred and forty-four references, many as recent as 1953. The bibliographies are footnoted on each page for convenient reference.

Doctors Coolidge and Hine have revised the text of this second edition to encompass some new concepts on etiology, classification and nomenclature. They have also given consideration to the discussion of traumatism of the supporting tissues by lateral and horizontal stress and to the corrective treatment of this condition.

Based on the premise that most periodontal disturbances stem from a very few entities that are influenced by various conditions as they develop, the authors have planned the text to begin with the normal condition of the soft tissues in good health. They then consider the gradual changes that develop with inflammation and dystrophy.

Part one consists of three chapters which include oral hygiene as a preventive measure in dental disease. It also includes a recent concept that all pathological changes which occur in the body can be classified in four general headings, namely, (1) in-

flammation; (2) dystrophy; (3) neoplasia; (4) anomalies.

Part two consists of six chapters dealing with inflammation of the periodontal tissues. This encompasses gingivitis in the acute and chronic form and the progress of gingivitis into periodontitis. The influence of the systemic factors is also emphasized.

Part three consists of three chapters dealing with the dystrophic changes in periodontal tissues. The dystrophic classification includes gingivosis, periodontosis, atrophy and traumatism.

Part four consists of two chapters: "Prevention and Correction of Occlusal Disharmony (Occlusal Equilibration)" and "The Use of the Toothbrush in the Care of the Teeth and Oral Tissues." The chapter on the use of the toothbrush presents many of the most popular techniques for home care including toothbrush instructions and dentifrices.

The text is dedicated to clinical periodontology. It is presented in a manner that is concise and easy to read. The classifications and terminology are up-to-date. The concepts are well presented. This book can be recommended as a fundamental text for the undergraduate dental student and it has a definite place in the office of the dental practitioner, as it is very complete with a good index and table of contents.

—Harold Santos.

The Science of Dental Materials, by Eugene W. Skinner, Ph.D. Fourth edition; 456 pages, 248 illustrations on 185 figures, index. W. B. Saunders Co., Philadelphia, 1954, $7.50.

In the preface the author states that this edition is not a reference book but a text for first-year dental students. He believes that it was necessary to rewrite the book in its entirety because many of the concepts in all of the basic sciences have been altered or changed during the past twenty years and, in addition, the mental maturity of the audience for which this book is intended — the dental student — has changed.

Several new subjects have been added in the fourth edition; zinc oxide-eugenol pastes; tooth restoration with acrylic resins; and cobalt-chromium alloys.

The zinc oxide-eugenol pastes have been presented very adequately; tooth restoration with acrylic resins includes the composition, properties and method of use of low-temperature resins. It is regrettable that the use of adhesives with these resins for filling materials is not discussed. The chromium-cobalt alloys are discussed relative to their composition, properties and the technical procedures used in the fabrication of dental restorations with these alloys. The chapter on zinc phosphate cements is supplemented with a description of resin cements.

The remainder of the text covers basically the same material presented in the third edition, published in 1946. In the fourth edition the principal changes in these chapters are in the wording and in the rearrangement of the subject matter. In a few instances, as in the chapters on denture resins, some additional information is given, for example, the chemistry of polymerization is treated more fully.

The reviewer questions whether the student will get additional information from this edition than was presented in the third, excepting the new subjects mentioned.

Like the third edition this fourth lacks sufficient dental examples to help clarify parts of the text. This is particularly true of the chapter on physical and chemical properties. These properties are discussed too abstractly and the reviewer believes that the use of dental examples, particularly when dealing with first-year dental students, would produce more interest and clarification of this very important subject.

The subject matter presented in this book on dental materials is quite complete

and it should be considered indispensable for the study of dental materials, both for the dental student and the practicing dentist. Dr. Skinner should be congratulated for making such a fine contribution to the study of this subject.

—Joseph V. Mitchell.

Oral Surgery, by Sterling V. Mead, D.D.S., M.S., B.S., D.Sc., F.A.C.D. Fourth edition; 1478 pages, 872 illustrations, 13 color plates. C. V. Mosby Co., St. Louis, 1954, $25.00.

This book is a completely rewritten edition of Dr. Mead's very comprehensive text. The preface states the aims of the book and gives a brief discussion of the scope of oral surgery. The author aptly comments on the value of consultation with specialists in other fields, recognizing that the surgical operative procedure is but a small part of the entire problem and that the total care of the patient requires cooperative effort.

The first few chapters of the book are devoted to diagnosis and general care of the patient pre and postoperatively. The chapter on anesthesia is excellent and of interest to everyone in dentistry. There are other chapters dealing with various subjects, i.e., anatomy, chemotherapy, antibiotics, inflammation, infection, etc., with the author's opinions in regard to their use and application in oral surgery.

The sections on the removal of teeth and other intraoral procedures will be of special interest to the student and general practitioner. The author presents the subjects well, with adequate illustrations. The care and conservation of soft and hard tissues are stressed. Complications following the removal of teeth are listed, and the reader may find procedures for treatment of these complications in other chapters.

There are also complete sections on fractures and tumors of the jaws and temporomandibular disturbances. The last chapter is on diet and nutrition with some suggested special diets for oral surgery convalescent patients.

Mead's Oral Surgery is an excellent text and belongs in the library of every oral surgeon as a reference. The student and general practitioner will find in the book a comprehensive coverage of the field with excellent references for further reading.

—Donald E. Walker.

Histology, by Roy O. Greep, Ph.D. 953 pages, 648 illustrations, including over 40 in color. The Blakiston Company, Inc., Garden City, New York, 1954, $15.00.

Thirteen eminent histologists who have concerned themselves with histologic teaching and research have combined their knowledge and experience to present this text. Originally conceived as the sixth edition of *A Textbook of Histology* by Bremer and Weatherford, the editor and contributors have so revamped this former work in format, material and illustrations as to warrant its presentation as an entirely new treatise.

Although concisely and coherently written, the text nevertheless encompasses the fundamental material essential to an effective understanding of histology. Each chapter has appended a concise but valuable bibliography. It is illustrated by uniform good-quality photo-micrographs and illustrations, and endowed with a satisfactory sequence of subjects.

Correlation of the purely descriptive morphology with physiologic, pathologic, chemical and experimental analysis is cogently attempted throughout the textbook. The integration is of valid nature since many of the collaborators have a rich clinical background so necessary for weaving morphology and function together.

The histologic preparation of tissues has received only a brief account since detailed presentations are given in texts and journals devoted to this particular topic. On the other hand a chapter is given entirely to the young discipline histochemistry,

which prepares the student for a broader and deeper understanding of cellular physiology and chemistry.

The text is savored by a chapter on the embryological origin of the principal body tissues. This appropriate discussion lays the foundation for the ensuing study of tissues and organ systems.

An earnest and praiseworthy effort is made by the contributors to present the controversial views of unsettled problems which should stimulate the good student, if disturbing to the mediocre one.

There are certain features of the book which, in the interests of clarity and completeness, should be considered. The title of chapter one, "Structure of Organisms," is puzzling to the reviewer. It neither discusses structure nor the organism, but is devoted to a brief historical survey of histology, followed by the characteristics of various types of microscopes and other devices for studying histology.

Chapter nine which considers bone includes a large paragraph devoted to a discussion of osteoclasts and the theories of bone resorption. It is felt that at least one photomicrograph would be instructive to the student who attempts to identify this controversial cell for the first time. Furthermore, the interchangeable use of the words, "resorption" and "absorption" for the elimination of bone tissue is confusing. As indicated by the prefix, re; resorption means that some structure or substance once formed or built by the body is taken back into the organism, for redistribution or elimination. Absorption, on the other hand, means that some new external substance is taken into the cell protoplasm, e.g., a drug is absorbed from the intestinal wall.

Chapter nineteen, entitled "Oral Cavity," shows an inverted photomicrograph of a frontal section of a cat's head. This would appear to be a publisher's error, since there is no obvious advantage for this reversal.

The purpose of this text is to assist medical and dental students acquire an adequate knowledge of the microscopic structure of the human body, and correlate it in terms of function. Furthermore, it serves as a reference for the teacher and practitioner. The text accomplishes these purposes to a commendable degree.

—Russell D. Coleman.

Essentials of Removable Partial Denture Prosthesis, by Oliver C. Applegate, D.D.S., D.D.Sc., F.A.C.D. 323 pages, 352 illustrations, 10 in color. W. B. Saunders Co., Philadelphia, 1954, $10.00.

Removable partial denture prosthesis appears to be a highly controversial section of denture prosthesis. There is a lack of agreement upon a classification for the partially edentulous mouth and upon the method of treating it. The dental profession has long needed a textbook on this subject but the book that we are now reviewing is lacking in some of the requirements. This opinion has been reached by studying the subject material of the author and the makeup form by the editor and publisher.

The book is oversize and does not lend itself to fit easily into the average bookshelf. There is a wealth of information in this volume but the motif is the absence of chapters as such and with varying forms of print does not make for easy reading but rather serves to confuse the issue. The format in general is quite objectionable. The table of contents lists the subject matter on each succeeding page rather than having it alphabetically arranged.

At first glance the book appears to be a compend of assorted information. Upon closer scrutiny it is found that the book is divided into two parts. The first, a question and answer section and the second, a technic for the construction of a removable partial denture. The first sec-

tion is quite helpful if the question that you wish answered appears on the pages. It is quite evident that the subject of removable partial dentures cannot be covered by the answering of 289 or twice this number of questions. It would appear that this is the result of a teacher's notes being put into book form.

The second section covers a technic in the clinical procedure of constructing a removable partial denture. The author states, "the methods suggested represent the technic currently employed to accomplish a desirable partial denture service, within the economic reach of the average patient under the existing conditions." This would serve to imply that all partial dentures could be patterned after this one case as illustrated. This technic has several fine features but the fact must not be overlooked that this is only one of many technics. It is noted that one detail has been disregarded in the use of proprietary preparations, such as the alginate impression material. The manufacturers' instructions should be complied with for there is a difference in the handling of some of the brands.

In my opinion, this book would have been more effective and of greater value to the profession if partial denture prosthetics had been discussed in the first section. This followed by a section of the author's favorite technique and then followed by a question and answer section.

—Jerome C. Strain.

Bacteriology for Students of Dental Surgery, by R. B. Lucas, M.D., M.R.C.P., D.P.H., and I. R. Kramer, L.D.S., R.C.S., 262 pages, 56 illustrations, index. J. A. Churchill, Ltd., England, 1954, 26S. 6D.

It appears that the authors have intended that this text be used primarily in the instruction of bacteriology for undergraduate students in dentistry.

Approximately one-half of the text is devoted to basic concepts in bacteriology such as morphology, immunity, hypersensitivity, etc. These principles are treated simply and concisely.

The remainder of the book deals with a general survey of infectious diseases including the viruses. Two chapters are specifically related to dentistry, one of which contains a brief discussion of the bacteriology of dental caries. The other deals with the bacteriology of the dental pulp and periodontal lesions.

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—Hermann Becks.

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I question the use of this book in a well organized and thorough course in bacteriology for dental students. The text could serve as a desk reference or perhaps a review book. I do not agree with the author's statement that dental students are burdened with texts primarily written for medical students, hence the need for textbooks in basic science primarily designed for dental students.

—Marvin M. Stark.

Histopathologic Technic and Practical Histochemistry, by R. D. Lillie, A.B., M.D. Second edition; 501 pages. Blakiston Co., New York-Toronto, 1954, $7.50.

Lillie's *Histopathologic Technic and Practical Histochemistry* lends greater scope to the field of microscopy in its treatment of chemistry as related to histopathologic technic. It serves the two-fold purpose of informing as well as exposing the possibilities for the development of new microchemical and physical methods. The material is well organized and embraces the localization of enzymes, methods for demonstrating fats and lipoids, methods for identifying the various cell products and substantial coverage of stains and staining, including selected variants of the newer methods. This volume will be of inestimable value to those without previous experience since the standardization of optimal times, temperatures, pH levels and reagent concentrations is furnished in workable form.

—Hermann Becks.

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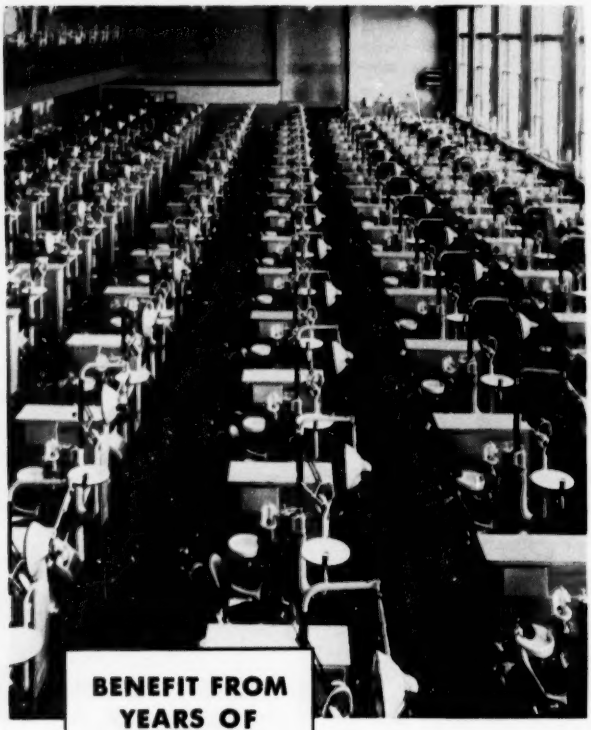

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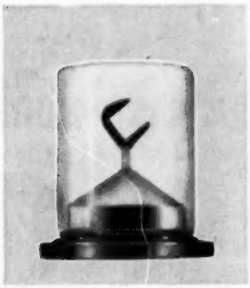
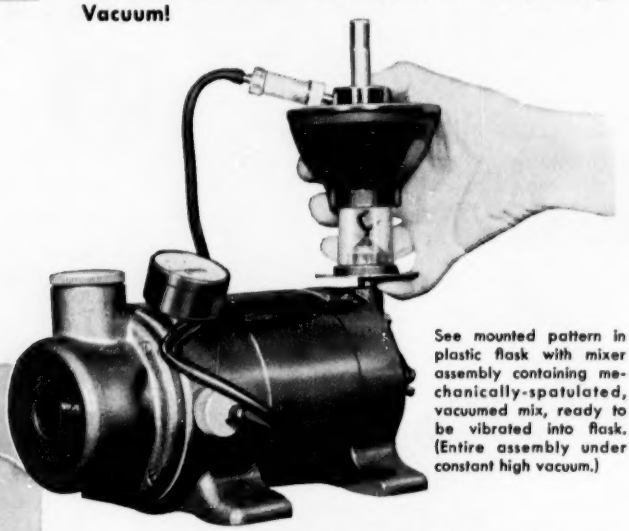


Head-on view of transparent flask with wax pattern.



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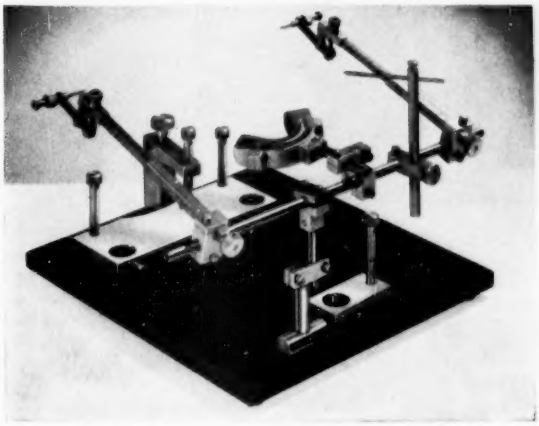

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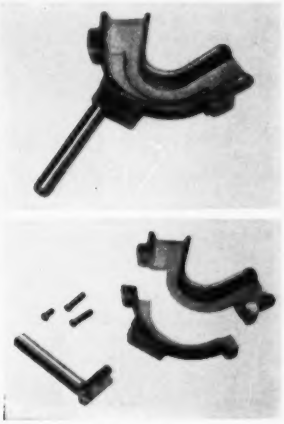

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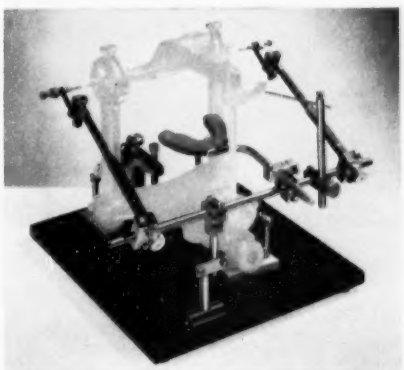

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Dr. Tylman has combed the dental literature in both the clinical and research fields, he has evaluated the newer technics objectively in the effort to give the busy practitioner and student a basis for the acceptance or trial of a new technic or material.

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By **STANLEY D. TYLMAN, A.B., D.D.S., M.S., F.A.C.D.,** Professor of Prosthetics, Head of the Department of Fixed Partial Dentures, University of Illinois, College of Dentistry, Chicago, Ill.

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